C46.26
71

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

The Research Review

DEC 23 1971

U.S. DEPARTMENT OF COMMERCE

Economic Development Administration

The Research Review is published for the employees of the Economic Development Administration and Regional Commissions concerned with economic development as one means of keeping the staffs informed of the nature, results and applications of research into regional problems. The publication is prepared, in cooperation with the personnel of these Agencies, by the Research Review and Dissemination Group, Office of Economic Research, EDA, Samuel M. Rosenblatt, Director.

For sale by the U.S. Department of Commerce, Washington, D.C. 20230
Price 75 cents.

The Research Review

JUNE 1971

U.S. DEPARTMENT OF COMMERCE
Maurice H. Stans, Secretary
Robert A. Podesta, Assistant Secretary
for Economic Development

CONTENTS

A Multiregional Input-Output Model for the United States, by Karen Polenske 1

The Implications of Rural-Urban Migration for Regional Development and Growth Center Policies, by Irving Fisher . . 8

A Composite Mapping System for Practical Location Research, by George Nez 16

Description of Research and Training Projects. 29

Area Problems and Potentials

Studies in Urban Development
University of California, Berkeley 30

Research and Training Program in Regional Development Policy and Programming
Center for Urban Studies,
University of Chicago 32

The Changing Structure of Employment and Income in the United States
University of Georgia 34

Regional Economic Development Seminar
Harvard University 35

The Municipal Information System Research Project
Housing and Urban Development (HUD) 37

Dimensions of the Urban Problem and a National Policy for Urban Development
Massachusetts Institute of Technology 39

Regional Economic Problems, Human Capital, and the Labor Force
National Bureau of Economic Research 45

Research and Training in Regional Economic Development
University of North Carolina 46

Estimates of Personal Income by County; and Migration by Local Areas
Office of Business Economics, Department of Commerce 48

The Role of Growth Centers in Regional Development Policy
University of Kentucky
University of Texas at Austin 49

Economic Development Operations and Processes

Industrial Location Determinants Study
Boise Cascade-Urban Development Corp.
Bureau of the Census
Consolidated Analysis Center, Inc. (CACI) 51

Coordination of Public and Private Decisions in Planning and Allocation of Resources for Regional Development
Brandeis University 53

Role of Commercial Banks in Regional Economic Development
Federal Reserve Board 57

The Industrial Plant Location Decision Process
Kent State University 58

Subnational Impact of National Economic Activity

Research on Regional Economic and Social Analysis of Federal Expenditures
Curtis Harris Associates 60

Research and Training in Regional Economic Decisions Model
University of Maryland 62

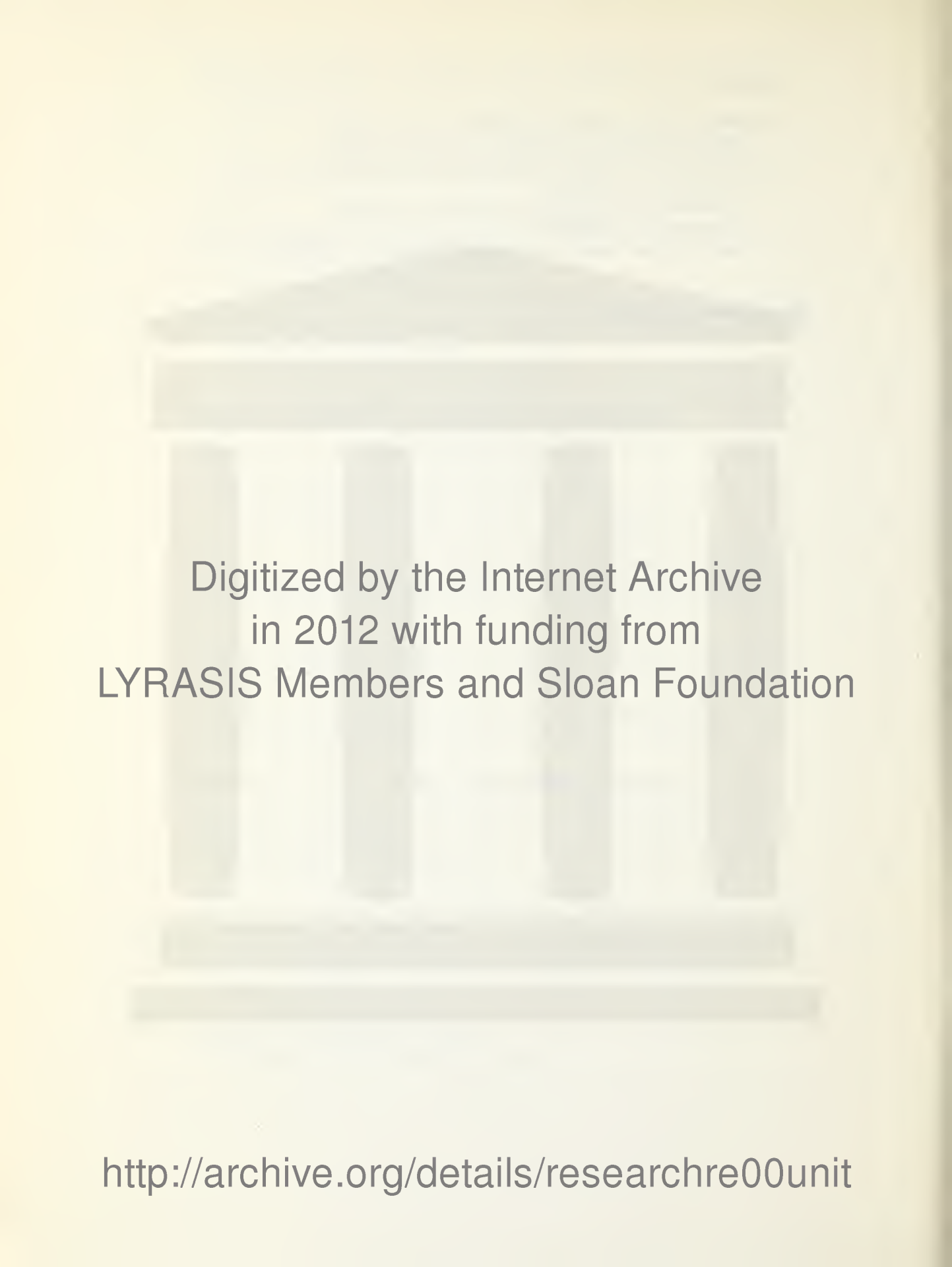
Public Investment Programs and Regional Development
Washington University, St. Louis 64

Regional Forecasting Models
University of Washington, Seattle 65

Training

Student Internship Programs
Southern Regional Education Board (SREB)
Western Interstate Commission for Higher Education (WICHE)
Midwestern Advisory Committee on Higher Education (MACHE)
New England Board of Higher Education (NEBHE) 68

EDA Research Reports 72


Digitized by the Internet Archive
in 2012 with funding from
LYRASIS Members and Sloan Foundation

http://archive.org/details/researchre00unit

A MULTIREGIONAL INPUT-OUTPUT MODEL FOR THE UNITED STATES

*by Karen Polenske**

Within the last decade, an increasing number of policy decisions at all levels of government have required an extensive knowledge of regional economic conditions. This requirement will undoubtedly expand in the future. Evidence of the need for economic analysis applied at a regional level is readily apparent in many of the proposals presently being discussed in relation to energy, water, and fuel requirements, transportation, environmental control, employment, arms de-escalation, inflation, and so on.

A multiregional input-output model can be used to assist in a rigorous analysis of these and other economic issues. In the input-output accounting framework, all the sales and purchases of every industry in each region of the economy can be described and analyzed. This approach has an advantage over previous tools of regional economic analysis in that the analysis concerns the total impact--direct and indirect--of variations in economic activities. For example, if a school is to be built in a given state, the builder must purchase lumber, heating and plumbing apparatus, electrical equipment, windowpanes, and numerous other items. Some of these purchases will be made from firms located in another state. The firm producing the goods must also make purchases, some from firms within its state, some from firms in other states. Thus, a purchase by the builder located in one region will touch off a chain of transactions involving many industries and regions. The multiregional input-output model that has been formulated and implemented at the Harvard Economic Research Project (HERP) includes 44 regions and 78 industries. To implement the model, a comprehensive set of regional data, which uses a common industrial and regional classification scheme and covers all industries and regions in the economy, has been assembled for the United States.

---

* The work sponsored by the Office of Economic Research, under contract with the Harvard Economic Research Project, for multiregional input-output analysis was completed at the end of December 1970. (Project No. 99-7-13089). The research effort is now under review and evaluation. Reprinted here is the introduction to the final report submitted by Miss Karen Polenske. Inquiries regarding the model should be directed to the Office of Economic Research, Economic Development Administration.

Such a large undertaking has of course required the combined efforts of many people. Since the project began, in March 1967, the major portion of the work has been done at HERP by a research and programming staff of approximately ten people, three full-time and seven part-time. A substantial amount of the data assembly, however, was completed by the staff members of Jack Faucett Associates (JFA) under subcontracts with HERP or, as in one case, under a separate contract with the Office of Business Economics (OBE).

During the three and a half years that the contract with the Economic Development Administration (EDA) has been in effect,[1] five major sets of multiregional input-output data have been compiled for each state; base-year outputs, employment, and payrolls; 1963 interindustry flows; 1963 interregional trade flows; base-year final demands; and 1970 and 1980 projected final demands. A consistent set of multiregional input-output tables has been assembled for each state for 1963, and supplemental historical state final demand estimates have been made for 1947 and 1958. For each of the three years, the state estimates are consistent at the aggregate level with the respective OBE national input-output tables. The six components of final demand have been projected to 1970 and 1980 and have been made consistent with the national 1970 and 1980 projections published by the Bureau of Labor Statistics (BLS). Given the base-year technology and interregional trade data and the projected sets of final demands, 1970 and 1980 regional outputs and shipments of commodities among regions have been generated simultaneously using a multiregional input-output model described in Part II of this report. The sets of data that were assembled and calculated during the course of this study are listed in Table I.1.

For all except the interregional trade flows, the data were assembled for 86 industries in 51 regions (50 states plus the District of Columbia)[2] using the OBE input-output industrial classification scheme given in the complete report. Since there are 4,386 figures for each particular component, a complete multiregional input-output set of data for a single year contains more than 300,000 numbers. As shown in Figure I.1, data

---

1/ For the last year of the contract, funds were also supplied by the Office of Economics and Systems Analyses, Department of Transportation; the Bureau of Labor Statistics, Department of Labor; the Office of Emergency Preparedness, Executive Office of the President; the Office of Civil Defense, Department of Defense; and the Bureau of Mines, Department of the Interior.

2/ In the case of the interregional trade flows, detailed data could be obtained for only 44 regions and 61 industries, because the service and value-added industries do not trade commodities. The classification scheme for the 44 regions is given in the complete report.

Table I.1

MULTIREGIONAL INPUT-OUTPUT DATA
FOR THE UNITED STATES

Name of Matrix	Matrix Dimension	Years		
1. Jack Faucett Associates Subcontract 1968-1969				
Payrolls	51 x 86	1947	1958	1963
Employment	51 x 86	1947	1958	1963
Outputs (current dollars)	51 x 86	1947	1958	1963
Outputs (constant $58, $63)	51 x 86	1947		
Outputs (constant $63)	51 x 86		1958	
Outputs (constant $58)	51 x 86			1963
2. Harvard Economic Research Project, 1947, 1958, & 1963 Final Demands				
Personal Consumption Expenditures	51 x 86	1947	1958	1963
Gross Private Capital Formation	51 x 86	1947	1958	1963
Net Inventory Change	51 x 86	1947	1958	1963
Gross Exports	51 x 86	1947	1958	1963
Federal Government	51 x 86	1947	1958	1963
State & Local Government	51 x 86	1947	1958	1963
3. Jack Faucett Associates Subcontract 1969-1970				
Personal Consumption Expenditures	51 x 86		1970	1980
Gross Private Capital Formation	51 x 86		1970	1980
Net Inventory Change	51 x 86		1970	1980
Gross Exports	51 x 86		1970	1980
Federal Government	51 x 86		1970	1980
State & Local Government	51 x 86		1970	1980

Table I.1 (cont'd)

	Name of Matrix	Matrix Dimension	Years		
4.	Harvard Economic Research Project 1963 Input-Output Tables				
	Regional Input-Output Tables (51 matrices)	83 x 83	1963		
5.	Jack Faucett Associates 1963 Interregional Trade Flows (1969-1970 contract with Office of Business Economics)				
	Interregional Trade Flows (61 matrices)	44 x 44	1963		
6.	Harvard Economic Research Project 1970 & 1980 Projected Outputs & Interregional Trade				
	1970 & 1980 Projected Outputs (2 matrices)	44 x 78		1970	1980
	1970 & 1980 Projected Interregional Trade Flows (122 matrices)	44 x 44		1970	1980

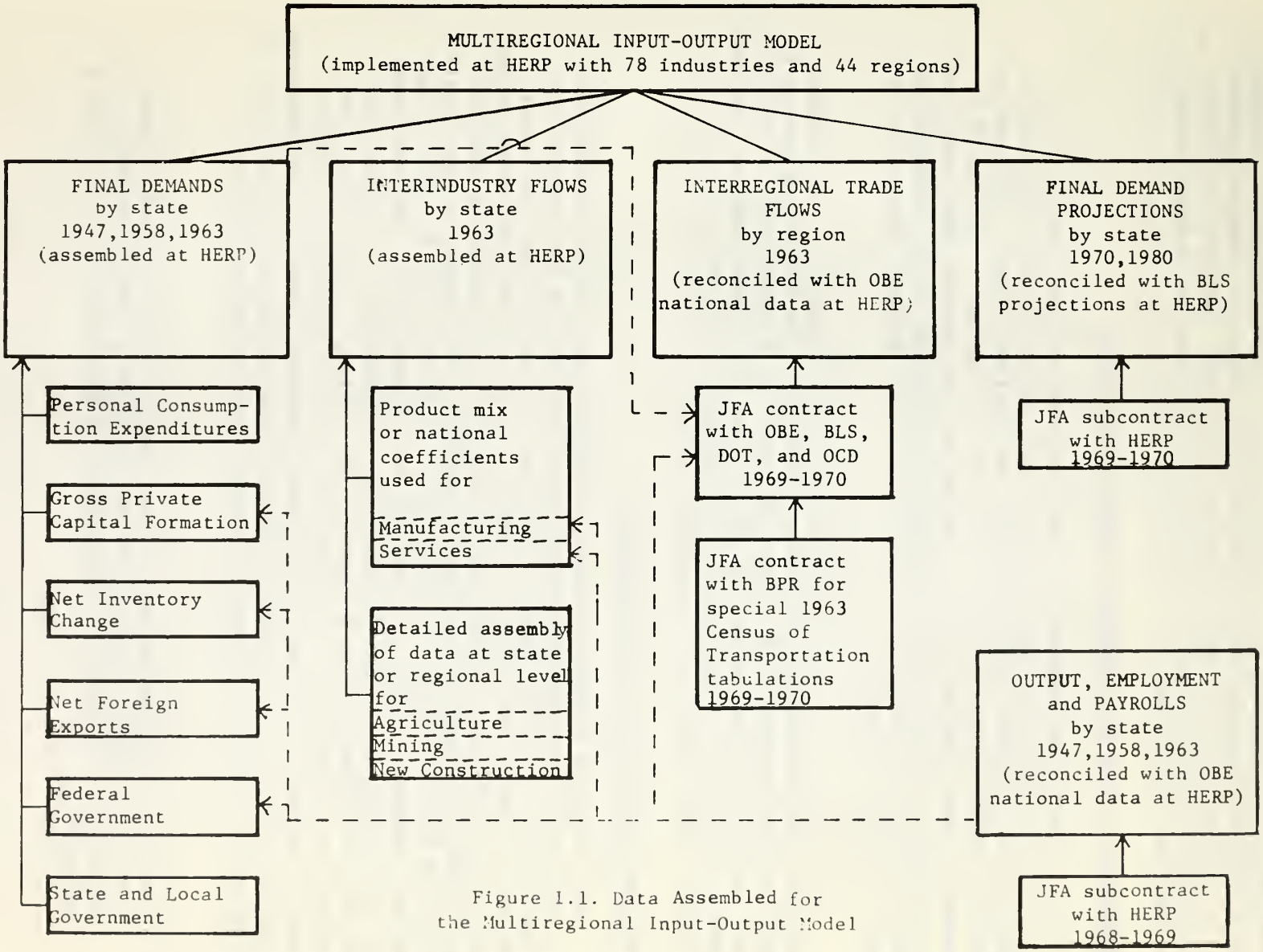


Figure 1.1. Data Assembled for the Multiregional Input-Output Model

from one of the major sets of estimates were often required to complete the assembly of another set. A considerable amount of research effort was of course required just to assure that as the data were assembled, an internal consistency was maintained between the state figures and the national aggregates.

Advantages of the Multiregional Input-Output Model.

This particular approach to multiregional economic analysis is extremely comprehensive and flexible. The multiregional input-output (MRIO) model provides both industrial and regional detail. Whereas in previous interregional analyses, only the net inflow or outflow of a commodity from a region could be estimated, the present MRIO model has been used to calculate the interregional shipments of the products of each industry. A complete set of all shipments between regions is provided for every product.

The model is flexible in terms of both data assembly and economic analysis. Supplemental data can be linked into the accounting system if other studies require more industrial detail or a finer regional breakdown, say by counties rather than by states. For these studies, the basic state-by-state set of data provides a control to assure industrial and regional consistency with the national figures.

Examples of the Model's Application.

For regional economic studies, the MRIO model can be reformulated in many ways. The MRIO framework can be used to make analyses of the industrial and regional impact of national economic policy decisions, and, at the same time, the basic results of a multiregional input-output analysis can provide controls for investigations of economic problems particular to a region or a group of regions. An example of the flexibility of the model is a 1967 study made at HERP of the industrial and regional economic impact of a cutback in Vietnam military expenditures. For that analysis, the United States was divided into 17 regions with the six New England states grouped as one region. A year later, the analysis was extended for a subregional study of the effect on Massachusetts industries of the hypothetical spending cutback.[3/] The advantage, of course, is that the regional figures from the multiregional study established a control to keep the subregional estimates for the

---

3/ A report on the Massachusetts study was prepared for the Economic Development Administration and the Governor's Advisory Council on Science and Technology, Commonwealth of Massachusetts, by Donald R. Boulanger.

Commonwealth of Massachusetts consistent with the original New England and national totals. Otherwise, if an independent economic analysis were to be conducted for each state and the resulting figures, say employment, summed, the national figures so obtained would undoubtedly vary widely from observed national aggregates.

THE IMPLICATIONS OF RURAL-URBAN MIGRATION FOR REGIONAL DEVELOPMENT AND GROWTH CENTER POLICIES

*by Irving Fisher**

Principal Conclusions of Recent Studies of Rural-Urban Migration

A number of recent studies have examined various aspects of the rural-urban migration process. Most of these studies, however, are concerned with four central issues which might be classified as follows:

- o descriptive studies that identify regional and interregional patterns of rural-urban migration;
- o theoretical studies that explore the mechanics of the migration process and attempt to determine the principal causes of rural-urban migration;
- o comparative studies that attempt to differentiate between migrant and nonmigrant components of the population; and
- o studies that measure the economic benefits obtained from rural to urban migration.

1. Regional and Interregional Patterns of Migration. Although there has been considerable speculation that the rate of migration from rural to urban areas may have decreased during the 1960's, several recent studies (as well as preliminary estimates from the 1970 Census) provide evidence to the contrary. These studies suggest that the movement of population

---

* This project, begun in the summer of 1970 and completed in March 1971, has reviewed and evaluated the findings of recent studies of the rural-urban migration process and examined their implications for regional development and growth center policies. The summary presented here provides a survey of these findings and briefly reviews the major implications for federal growth center policies. It also identifies several aspects of the rural-urban migration process about which considerably more information is needed. The project was carried out as part of a grant from the Office of Economic Research to Brown University (EDA Project No. 99-7-13099).

from rural areas of the South and Midwest to larger metropolitan regions in the North and West continued through the decade of the 60's at a rate very nearly equal to that observed in earlier periods.

In particular, evidence indicates that:

(a) migration from outlying rural areas to central metropolitan areas within the same state or geographical region--regional rural-urban migration--continued throughout the entire decade, causing significant decreases in population in most rural areas;

(b) the rate of migration from the South to the North and from the Midwest to the East and West--interregional rural-urban migration--also remained relatively stable through the decade, especially for the black component of the population.

(c) contrary to expectations, there does not appear to have been a decline in the number of black migrants from the South to Northern metropolitan areas;

(d) return migration--movement of population from metropolitan areas to smaller urban centers and rural areas--appears to have increased significantly during the decade, especially for the black component of the population.

2. Causes of Rural-Urban Migration. Theoretical models of the migration process tend to explain the movement of people from rural to urban areas largely as a response to economic opportunities migrants perceived to exist in potential urban destinations. Not surprisingly, a substantial amount of evidence suggests that the principal motivating force in the rural-urban migration process is, indeed, economic. In summary, these studies indicate that:

(a) rural-urban migration (whether regional or interregional) occurs primarily because migrants seek more satisfactory employment opportunities and improved standards of living;

(b) expectations of potential job opportunities and improved living conditions may play a more important role in the migration process than actual knowledge of existing job opportunities.

Although the motivation to migrate is often economic, the selection of a potential urban destination is more likely to be based on non-economic factors typically excluded from most theoretical models of migration. For example:

(c) a significant proportion of all rural-urban migrants initially decide to migrate in response to information received from friends and relatives living in urban areas;

(d) a substantial number of rural-urban migrants appear to move to urban locations because friends and relatives already reside in these areas and are able to provide assistance in making the move.

There is little evidence to support the hypothesis that rural-urban migration, especially from the South to the North, is related to the availability of higher welfare benefits in Northern cities. In fact, there is some indication that recent rural-urban migrants from the South are less likely to receive public assistance than long term residents of the cities. Evidence suggests that:

(e) although a significant fraction of all rural-urban migrants do receive public assistance, a majority of these migrants have lived in urban areas and have been self-supporting for a number of years prior to receiving welfare;

(f) the proportion of rural-urban migrants who receive welfare assistance and who migrated during the 60's is extremely low, both for whites and blacks;

(g) a significant number of the more recent migrants from rural areas who do receive welfare assistance have been previously employed but are unable to find employment.

3. Characteristics of Migrants. A number of important findings emerge about the characteristics and attributes of the typical rural-urban migrant:

(a) rural-urban migrants are consistently better educated, more highly skilled, and younger than their non-migrant counterparts remaining in the rural areas;

(b) the flow of rural-urban migrants seriously depletes the labor force in the rural areas, leaving a residual population that is generally older, less-well educated, and less likely to possess the skills and attributes necessary to obtain suitable employment;

(c) in comparison with long term residents of urban areas, recent rural-urban migrants are typically as well educated, generally younger and appear to have no more difficulty finding employment than their urban counterparts.

4. Economic Benefits from Rural-Urban Migration. Evidence indicates that rural-urban migrants (both regional and interregional) are usually substantially better off than their nonmigrant counterparts remaining in the rural origins. Specifically, the evidence suggests that:

(a) substantial economic gains may be realized from rural-urban migration within the same geographical region;

(b) even larger benefits may be realized from inter-regional rural-urban migration (i.e., south-north);

(c) benefits from rural-urban migration are proportionately larger for black migrants.

Implications for Regional Development and Growth Center Policies

As the evidence indicates, the decision to migrate from a relatively underdeveloped rural area to a larger metropolitan center tends to hinge on economic considerations and typically results in an increased income and higher standard of living. Consequently, the movement of people from rural to urban areas tends to siphon off the younger, better educated components of the rural population -- those likely to be the most productive workers -- leaving behind a less productive residual labor force. In short, well-developed urban centers provide attractive economic opportunities for residents of rural areas but, at the same time, create substantial obstacles limiting the development potential of these rural areas.

1. Industrialization of Rural Areas. Present programs of EDA and other Federal agencies focus on industrialization of rural areas with limited economic potential -- areas with populations typically under 10,000 persons. The likelihood of success for these programs depends primarily on whether

sufficient economic growth can be generated to make these regions competitive with the more prosperous urban areas. To accomplish this would require a sustained level of investment, a level sufficiently large to expand the economic base and provide increasing employment opportunities to the point where the rural area appeared at least as attractive as more distant urban areas. Whether this could be accomplished at reasonable cost is open to question. The important point, however, is that unless these regions can provide attractive and competitive employment opportunities, outmigration to larger urban areas will continue to limit their development potential. Thus, the potential success of rural industrialization programs depends importantly on halting, indeed reversing, the flow of migrants.

2. Alternative Programs to Aid Rural Areas. Many other types of programs designed to aid residents of underdeveloped areas have been suggested. Any such program, however, must take account of the effects of population movement. Two possible strategies that would utilize the momentum of existing patterns of migration and, consequently, provide a contrast to a policy of rural industrialization, might be briefly discussed.

(a) Regional development centers. One alternative might be to designate a set of intermediate-size urban centers that are already expanding relatively rapidly as regional growth centers (in contrast to rural growth centers.) These areas would already have sufficient economic potential to provide expanding employment opportunities for a growing labor force and would, in fact, be typical destinations for migrants from surrounding rural towns and villages. Investment in regional growth centers would thus take advantage of an existing economic base and a growing labor supply to provide a stimulus for further growth and development.

(b) Increasing the options of rural residents. A second alternative that might be utilized in conjunction with a regional development program would avoid direct interference with the processes of rural development but would focus, instead, on reducing the barriers to mobility and increasing the economic opportunities available to underdeveloped areas. Such a policy would expand the range of employment options available to rural inhabitants by increasing both their employment potential and their knowledge of employment opportunities in other places. Some elements that might be included are:

(1) economic assistance in moving from underdeveloped areas to regional centers;

(2) increased availability of information about employment opportunities in urban areas;

(3) job-training programs for migrants from rural to urban areas.

Although migration would appear to present a major obstacle for rural industrialization programs, there is insufficient information to allow a precise estimate of the magnitude of investment that might be required to halt the outflow of people from these areas. At first glance, however, the costs appear prohibitive, suggesting that alternative policies that utilize existing patterns of migration might prove more effective.

Areas for Further Research

Although the literature on migration is extensive, our understanding of the mechanisms underlying the migration process remains limited. Perhaps the most serious shortcoming is the lack of a realistic theoretical framework for explaining and analyzing observed patterns of population movement. While a number of investigators have been successful in relating observed patterns of migration to various socioeconomic variables, these studies have limited value either as tools for predicting future population movement or for providing a framework for evaluating alternative policy options.

The major difficulty stems from the degree of generalization and oversimplification characteristic of most theoretical treatments of the migration process. Present theories of migration often fail to consider the numerous noneconomic factors that influence the decision to migrate and the choice of destination. They also ignore differences in both the observed rates and patterns of migration among major subgroups of the population, and fail to explain the striking differences between intermetropolitan and rural-urban migration patterns. None of the existing theoretical models of migration take account of the linkage that appears to exist among subsequent moves, especially for rural-urban migrants. We should like to suggest several areas in which additional research and investigation is needed.

1. Disaggregation of the Migrant Population. There are indications that the mechanics of the migration process differ significantly for various subcomponents of the migrant population. Migration of low-income blacks, for example, seems to be independent of relative labor market variables, but closely related to such factors as ethnic similarity of origins and destinations. White migrants in the middle- and upper-income groups, however, move more often as a result of job change or in response to economic factors. Consequently, further research focusing on differential rates of migration among various subgroups of the population and their causes could provide a basis for constructing a more realistic theory of migration and could also provide additional insight into the rural-urban migration process.

2. Theoretical Models of Migration. Most models of the migration process rely on differences in labor market characteristics to explain aggregate migration flows. Disaggregation of the migrant stream into homogeneous sub-components is a first step in constructing a more useful theory of the migration process; the second step is to specify more appropriate models and to subject these models to empirical verification.

Current theories characterize migration as a two-stage process. First, persons decide whether to migrate, a decision influenced by various characteristics of the individual, and second, where to migrate, a decision based upon perceived job opportunities. Recent evidence, however, suggests that the two decisions cannot be easily separated, but that the determinations whether and where to migrate are made jointly. Thus, development of more elaborate and comprehensive models that include various nonlabor market as well as labor market variables and take account of major differences among subgroups of the migrant population should provide a more useful tool for predicting future patterns of migration and for analyzing the efficacy of various policy alternatives.

3. Additional Empirical Investigations. There are two other issues that could have significant implications for regional development and growth center policies, but about which relatively little is known: the linkage or sequence of moves in the rural-urban migration process; and the impact of return migration on the labor supply and population of rural areas.

(a) Rural-urban migration linkage. It is often assumed that migrants leaving rural areas in the South and Midwest move directly to larger centers of the North and West. Recent evidence, however, suggests that many of these migrants previously lived in smaller metropolitan centers prior to migrating to major urban areas. Consequently, the rural-urban migration process may be more complex than thought, involving a sequence of moves to progressively larger urban areas, perhaps initially within the same geographic region but eventually involving interregional moves.

The implications for regional growth center programs are obvious. The evidence implies that proposed rural growth centers would compete with the smaller metropolitan areas located within the same region for a skilled labor supply and not with remote urban centers. The evidence is quite limited, however, and additional empirical analyses are required to understand the rural-urban migration process more fully.

(b) Return migration. Evidence also exists suggesting that the flow of migrants from northern metropolitan areas to the South Atlantic states may have increased during the 1960's. These return migrants are typically better educated, more highly skilled, and earn larger incomes than their rural-urban counterparts. In fact, there is some

indication that major urban centers of the North serve as training grounds, importing relatively unskilled labor from rural and urban areas of the South and exporting more highly skilled workers to these same regions. Again, the implications for regional growth center programs could be significant, but existing data are not sufficient to assess accurately the significance of this phenomenon. Additional analysis of return migration could be highly useful in evaluating the potential impact of migration on regional growth center programs.

A COMPOSITE MAPPING SYSTEM FOR PRACTICAL LOCATION RESEARCH

by George Nez

The EDA's computerized composite mapping system (CMS) is now operational. It is designed to retrieve and map out a great variety of resources, project investments and proposed plans from the data banks of EDA, and other federal and state agencies. Further, it can form new maps from any areal data of private industrial location, mineral deposits, utility accessibility, etc. Any selected combination of maps from this file may be brought together automatically and superimposed to analyse location advantages/disadvantages. These maps may be correlated statistically, relative weights may be determined, or differential weights may be assigned according to policy objectives.

Developed by the Areal Planning Division, Office of Planning and Program Support, the system can produce quick-retrieval maps at low cost, for data down to four-square mile grids for the entire United States, extending off shore into the continental shelf for maritime, fishery, or mineral studies. The computer maps can be produced at about one twentieth the cost of conventional mapping.

Specific applications include:

1. Evaluation of areal impacts of public and private investments, relative to an index map of local socioeconomic change.

2. Approximation of optimal regional locations for a selected industry relative to a variety of locational influences.

3. Clustering of related industry optimal locations (from 2 above) to evaluate growth centers.

4. Locating, scaling and minimizing necessary infrastructure patterns in relation to 1, 2, and 3 above.

1. Description of the System

CMS itself does not embody analytic models. The art of using CMS revolves around selecting and weighting factors. Location simulation

requires a knowledge of the industries and location theory. Socio-economic index mapping involves a knowledge of the phenomena studied. The appropriate model for each use depends on the problem and the analyst's style.

EDA's computer mapping laboratory has created map matrices (coded maps) of all counties of the coterminous U.S. at a scale of 1:500,000, in standard sectors of 240 x 240 miles and cells of 2 x 2 miles. (Figure 1) Each county is identified by a unique three-character code which constitutes the map dictionary and which makes possible automatic mapping of any data given in tables of counties. Another map matrix at the same scale has been started for minor civil divisions (MCD's), but at present covers only some western states having extremely large counties, where finer subdivisions are necessary for locational analysis. Since the fourth count data of the 1970 census has much useful data on minor civil divisions, this MCD matrix can be extended over any part of the country.

An essential feature of the system is the direct link with the Agency's Quick Query data bank (QQP) for automatic retrieval and mapping. But data may be presented in any form, county or minor civil division tables, tapes, maps of any configuration, areal or satellite photos, etc. The input forms and grid system locate and store them all, making possible contiguous coverage over the country.

Since this mapping system is fast on compositing, it develops a voracious appetite for input data. Consequently a great deal of the work must go into building up an adequate map file. These map file data inputs include factor maps of two types: block maps and free form. A sufficient range of factor maps issued for variables influencing location of the industries or conditions being analysed; maps of 50 variables would be a minimal number to begin industrial location studies.

Census data blocked out by counties, minor civil divisions, and places, here called block maps. (Figure 2) Such tabular data need only be coded to the CMS county or other map matrix.

Some variables must be mapped as free form maps, such as mineral zones, water supply zones, gas supply zones, accessibility zones of various modes of transportation, labor commuting zones, or regional market density. The location analyst, with help of a specialist in each of these fields, must estimate the gradient of the influence, and draw appropriate contours, to which digit values are assigned. Allowances for relevant variables will be mapped separately to bring them into the composite picture. Both "block" data and free form maps become grid maps in digit scales which are comparable and make possible

FIGURE 1

THE U.S. MAP MATRIX USED IN CMS, WITH EXAMPLE FACTOR MAP DETAIL

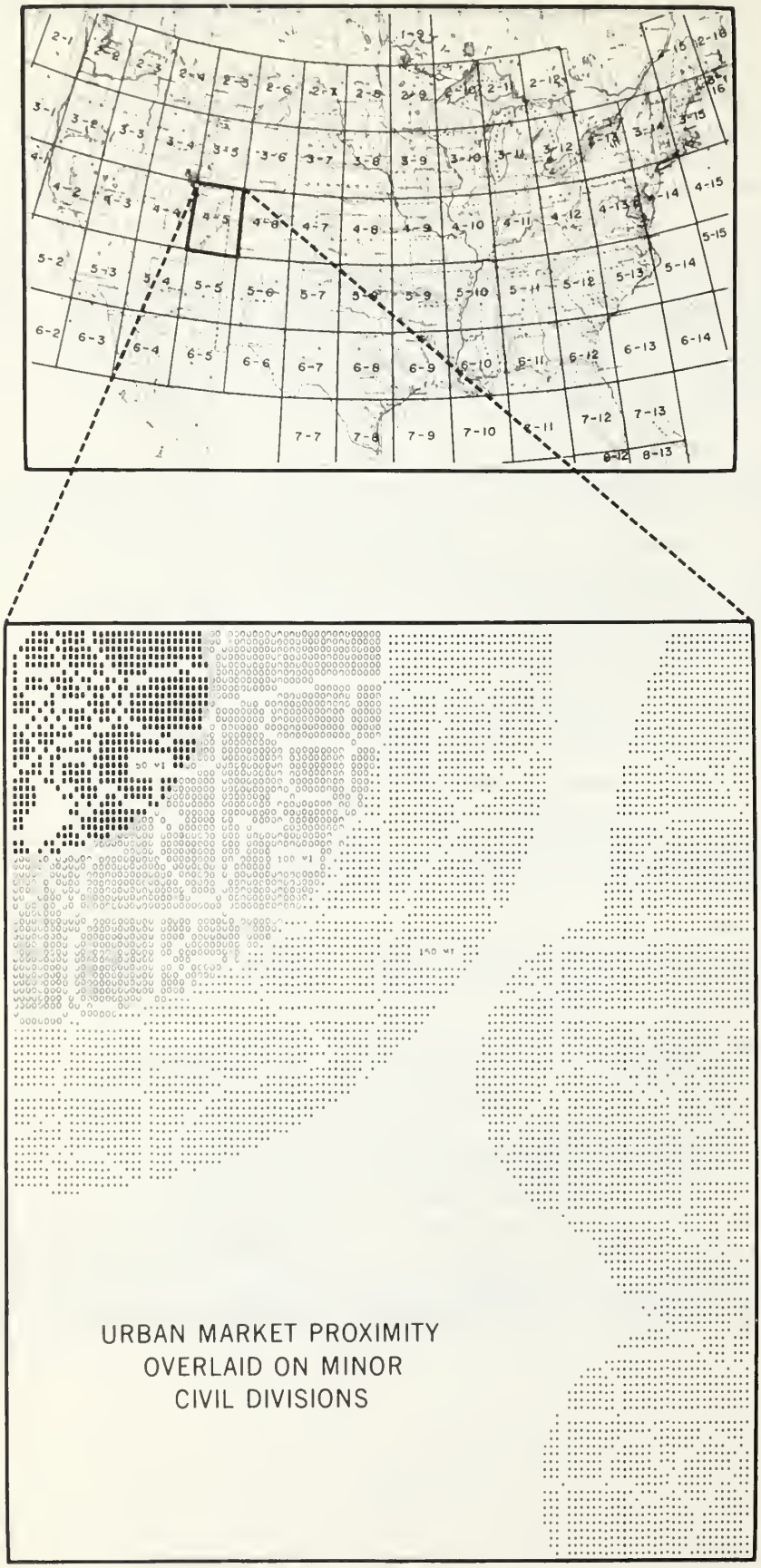
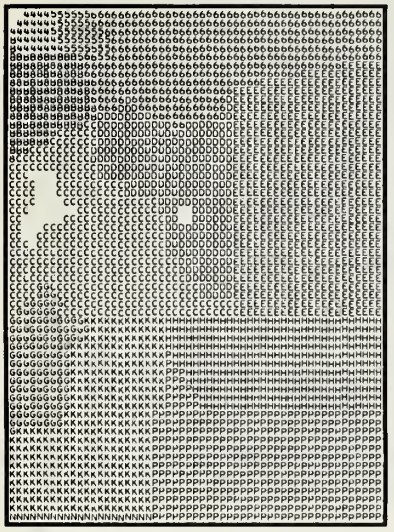


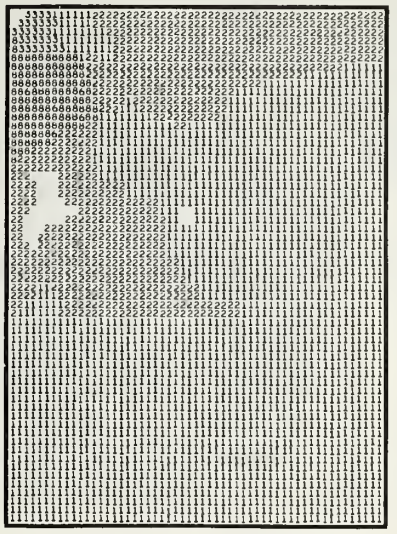
FIGURE 2

DEVELOPMENT OF CMS MAPS

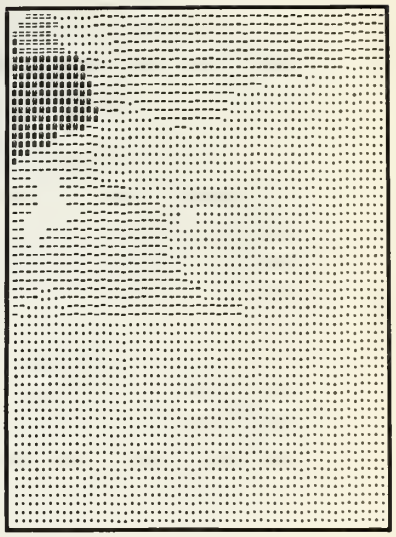
1. DATA CONVERSION MAP (COUNTY DATA)



PREFIXED COUNTY
BOUNDARY MATRIX MAP

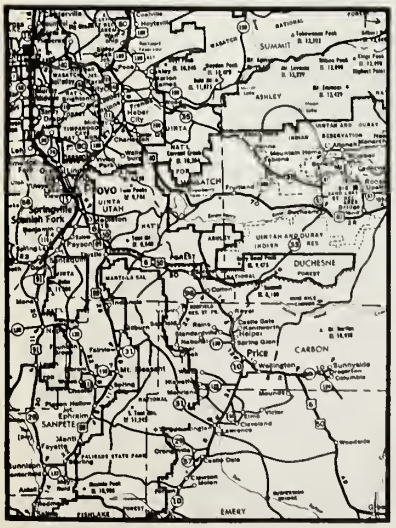


CONVERSION TO NUMERIC
FACTOR VALUES

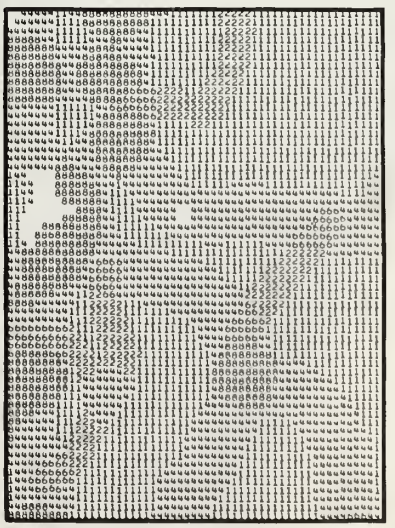


GREY SCALE
DISPLAY MAP

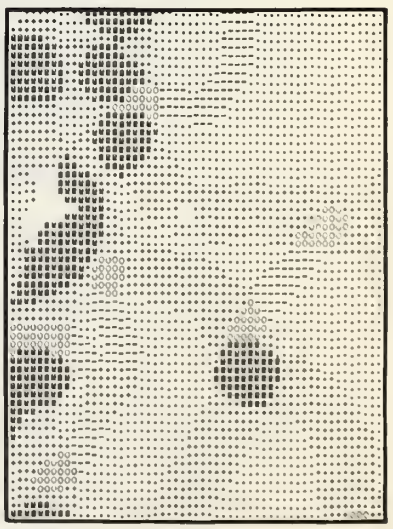
2. FREE-FORM MAP



REFERENCE MAP



PLOTTED ACCESSIBILITY
ZONE NUMERIC VALUES



GREY SCALE
DISPLAY MAP

the mixing of the different map forms in location studies.

Maps can be made of regional business climate factors as they vary over a region, such as tax variation, community attitude variations, leadership differences, differences in quality of living, etc. Adequacy of the sampling and geographic distribution must be determined.

Practical Applications of CMS

1. CMS can display quickly and at low cost the patterns of any socioeconomic statistics over large regions, from any taped census on population, agriculture, minerals, manufacturing, business, or housing. This is useful for quick reconnaissance.

2. Socioeconomic condition mapping is possible, by compositing relevant maps. For example, an "index" map of economic level at a given point in time may be obtained by superimposing maps of unemployment, labor participation rate, population change, educational achievement, housing defects, infant mortality, etc. (Figure 3)

3. Mapping of rates of intercensus change may be very useful. Significant changes over time in such variables as value added in production by a certain industry, or change in labor occupational categories, can be mapped automatically. A very meaningful application, for example, is to show intercensus rate of change in a map of socioeconomic conditions.

4. Optimal location of an industry or a major public facility can be simulated by compositing a set of locational factor maps. This simulation requires careful interpretation. An optimal location map for a given industry signifies only within-region optimal location, and only after industrial analysis has determined the between-regions feasibility of the industry. An optimal location map reflects only the resources and the distributive networks of "this" region. As an example: in Utah, economists first selected nine industries which appeared to be feasible for Utah and then used CMS to seek optimal locations within the State. This was done first for each industry separately and then for clusters of industries, where infrastructure services and industry linkages would be efficient. One of the industries was Furniture Production, for which the location factors and weights obtained from technical literature on the industry were:

Lumber and Wood Products	(.12)
Federal and State Highway Accessibility	(.15)
Railroad Accessibility	(.05)

FIGURE 3

COMPOSITE MAP OF SOCIAL CONDITIONS

COMPOSITE MAP OF SOCIAL NEEDS AND DEFICIENCIES OF FACILITIES, BY COUNTY, IN THE COASTAL PLAINS REGION.

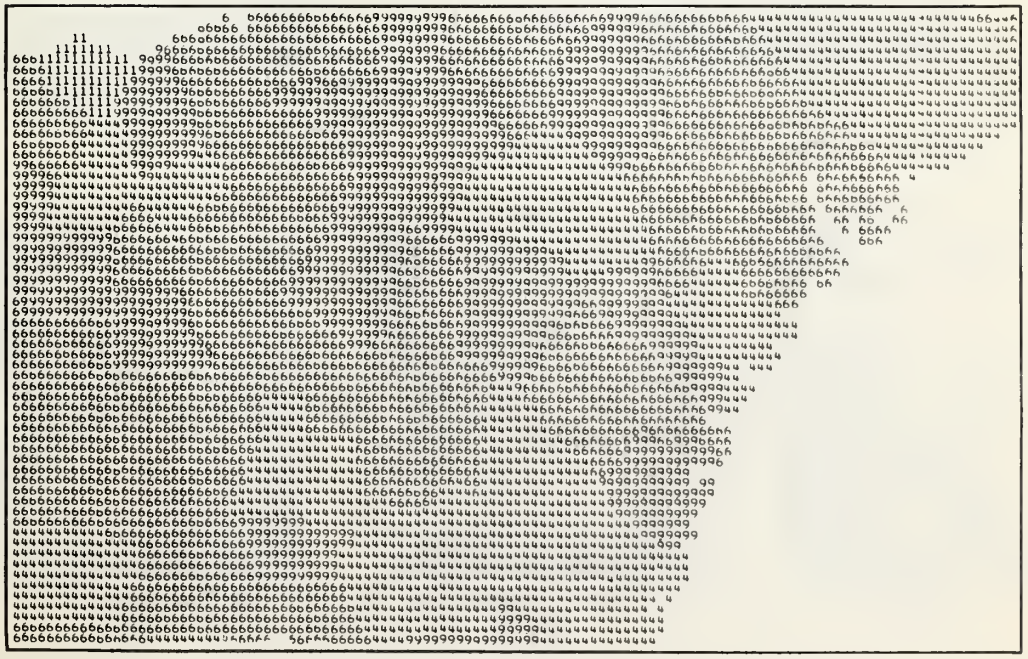
CONDITIONS ON THE MAP RANGE FROM WORST (HIGH NUMBERS, DARK SYMBOLS) TO BETTER (LOWER NUMBERS, LIGHTER SYMBOLS).

BASED ON EQUAL WEIGHTING (.16) FOR EACH OF SIX FACTORS

DILAPIDATED HOUSING
PERCENT SCHOOL ATTEND. 5-34YRS.
PERCENT INCOME -$1000 IN 1959
WELFARE EXPEND. PER 1000 POP.
PERCENT LABOR UNEMPLOYED 1960
HOSPITAL EXPEND. PER 1000 POP.

SOURCE

DATA FROM QUICK QUERY TAPES OF CENSUS MATERIAL IN THE 1967 COUNTY AND CITY DATA BOOK AS STORED IN THE EDA DATA BANK



Local Settlement Density	(.08)
Regional Market Zones	(.25)
Vocational Training Accessibility	(.10)
Labor Availability Rating (A special map of five conditions)	(.25)

The resulting Furniture optimal location map (Figure 4) showed that "Salt Lake City emerges as the most likely spot within the State, but followed closely by Heber, Provo, and Payson. Slightly less attractive, but still significant, are Brigham City, Logan, Vernal, Nephi, Manti, Green River, Orangeville/Castledale, Richfield, Fillmore, Delta, and Kanab."1/

Selection and Weighting of Variables.

The question "What are the relevant influences and weights?" can be approached several ways:

a. Industrial management judgment is the most practical first approach to indicate the important inputs, relative costs, locational prerequisites, marketing characteristics, and a ranking of all factors considered to affect the industry's location.

b. Relevant literature on specific industries exists in business publications, state bureaus of economic research and federal agencies, new locational factor studies emerging from EDA, various metropolitan studies, economic and geographic journals.

c. National input-output tables, or state, if available, can be interpreted to scale all important component costs and offer a ranking. If they overlook local geographic variations and business "climate" factors which are known to affect the industry, these must be sought from sources (a) and (f).

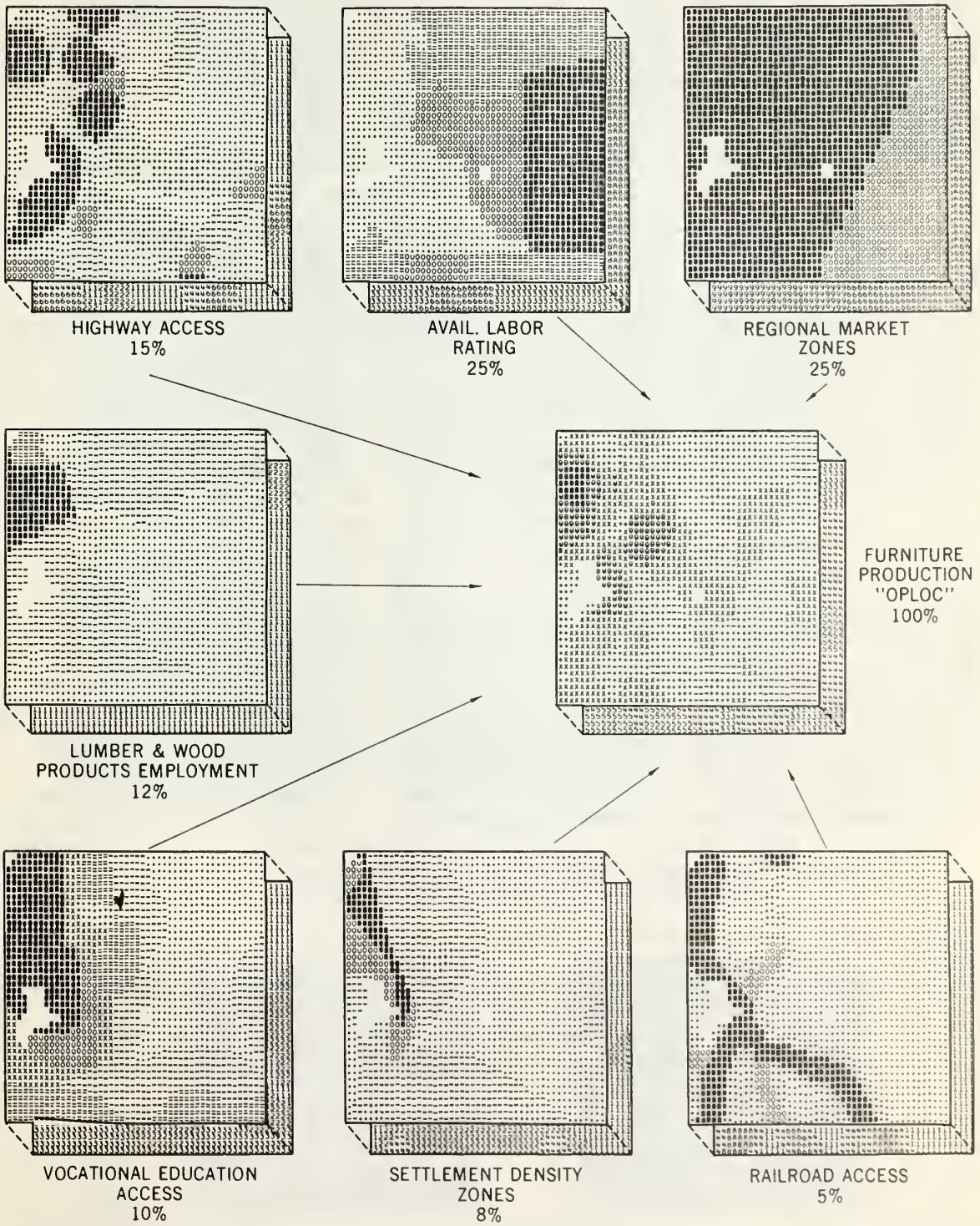
d. Factor weights may be estimated by multiple regression, where the reference "universe" is a larger region, or another region comparable to the object region, where the target

---

1/ Craig Bigler, "Using Composite Mapping in Optimum Location, a Test with Nine Industries in Utah," Office of State Planning Coordination, Salt Lake City, November 6, 1970.

FIGURE 4

SEVEN-FACTOR COMPOSITE MAPPING OF OPTIMUM LOCATION (OPLOC) FURNITURE PRODUCTION



These examples show only a small portion of Utah, so that digital detail can be seen in this reduction. The necessary area of search must cover a larger field, i.e. state or interstate region.

industry, and the "independent maps" are all the maps of suspected locational influences.

e. A number of individual industry optimal location maps may be combined into a multi-industry optimal location map, (Figure 5) which gives a rough indication of the relatively strong zones of industrial potential i.e. "growth areas." This is a common problem in development planning. CMS offers a way to rank industries and their locational propensities, to express a "policy" on the selection of appropriate places. (Figure 5) The individual industry optimal locations may be differently weighted for alternate policies, e.g.: "quickest labor absorption," or "lowest capital/job ratio," etc.

f. In addition, however, a finer simulation of the regional pattern of an industrial combination may be worked out by a sequential optimal location process. First, the individual industries may be ranked by dominance and/or independence in the industrial mix; then the most dominant industries may be located first; and these locations may be used as variables in plotting optimal locations for other industries. For public planning the most valuable purpose of this technique is to tailor expensive infrastructure to fit the most efficient locations and the sequential timing of development. Alternative designs may be tried for their effects upon the optimal locations. Also alternative industrial combinations may be tried for their effects upon the scale of local growth and infrastructure. Thus, by trial and feedback it is possible to approach optimal regional combinations of industry and infrastructure.

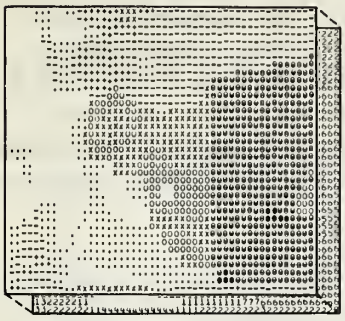
A Wide-Area Allocation of Industrial and Associated Growth.

Under the sponsorship of the Four Corners Regional Commission, the state planning agencies of Arizona, Colorado, New Mexico, and Utah are joined in a special study to anticipate and evaluate basic industrial growth over 32 state planning regions covering the entire 4-state region. This study will project a picture of the potential economic geography of many basic and local economic activities as of 1980. It also constitutes an extensive application of CMS to optimal location of all leading industries in a region.1/

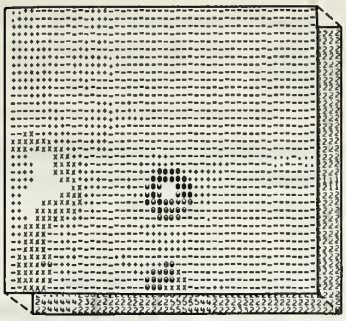
1/ Earlier tests of CMS were conducted in: (a) Coastal Plains Region in the optimal location of pulp mils, (b) in Utah, in optimal locations of nine industries, and (c) in Colorado, in measuring varying local impact of fourteen concurrent public and private investments.

FIGURE 5

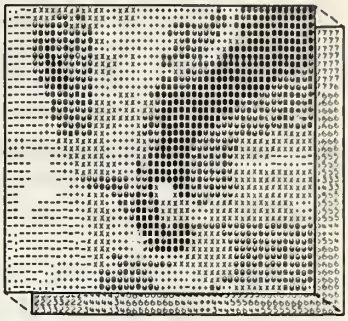
NINE-OPLOC COMPOSITE MAPPING OF FAVORABLE MULTIPLE INDUSTRY LOCATIONS



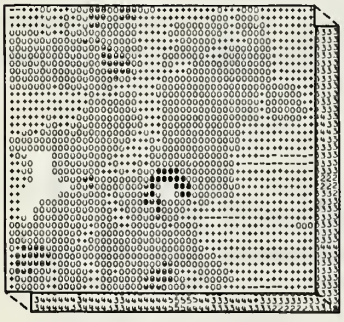
1. APPAREL PRODUCTION



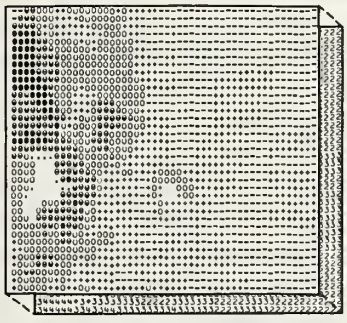
2. WATER SPORTS FACILITIES



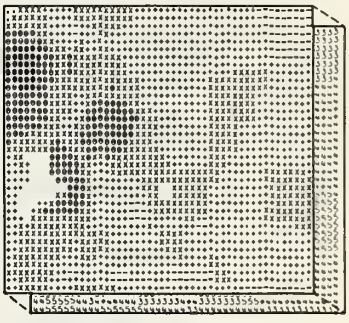
3. WINTER SPORTS FACILITIES



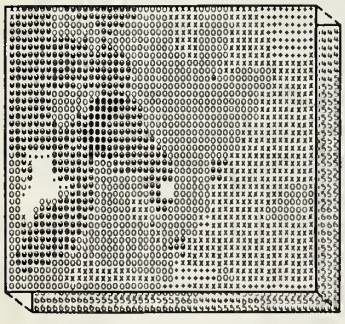
4. SUMMER SPORTS AND TOURIST FACILITIES



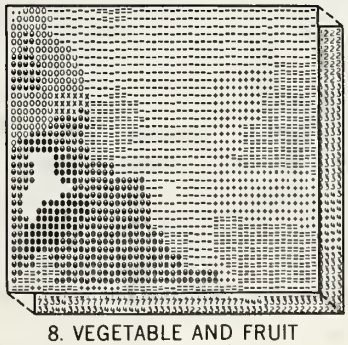
5. RETIREMENT FACILITIES



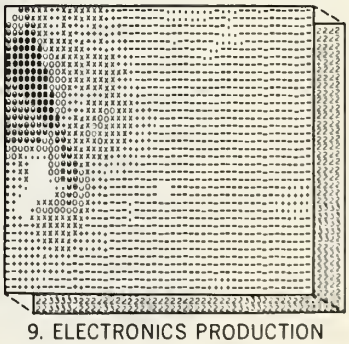
6. FURNITURE PRODUCTION



7. PLASTICS PRODUCTION



8. VEGETABLE AND FRUIT PROCESSING



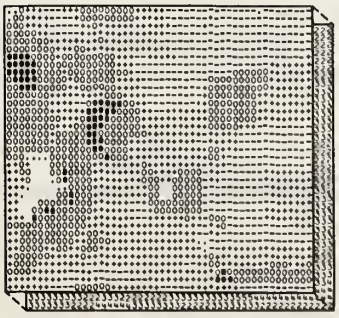
9. ELECTRONICS PRODUCTION

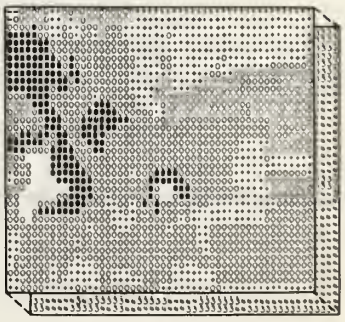
COMPOSITES FOR ALTERNATIVE POLICIES

POLICY 1
INDUSTRY WEIGHT

1. = 8%
2. = 8%
3. = 15%
4. = 15%
5. = 15%
6. = 8%
7. = 8%
8. = 8%
9. = 15%

100%





POLICY 2
INDUSTRY WEIGHT

1. = 26%
6. = 20%
7. = 18%
8. = 20%
9. = 16%

100%

These examples show only a small portion of Utah, so that digital detail can be seen in this reduction. The necessary area of search must cover a larger field, i.e. state or interstate region.

Although the official boundaries of the Four Corners Region embrace only the "interior" 70% of the area, and 33% of the population, the economic and geographic studies must take in the entire four states to analyse the dominating effect of the metropolitan economies surrounding this interior region. Thus the entire area includes 424,000 square miles and 6 million persons (1970) and an extremely varied economic geography, ranging from mountains to deserts, from Indian reservations to the economies of Denver, Phoenix-Tucson, Salt Lake City, and Albuquerque-Santa Fe. Numerous subeconomies exist -- in fact 32 have been delineated by the states as State Planning Districts, for purposes of growth center planning, public facilities planning, and federal-state-local interagency coordination. 1/

This study is especially significant in U.S. regional planning methodology since it flows from inter-regional to regional to district levels. The 32 districts, which have been delineated by the States for multiple project coordination, are of such population and area as to constitute convenient zones for many public and quasi-public facilities, functional labor sheds, and service sheds for industry. (Figure 6)

The projection method uses two submodels:

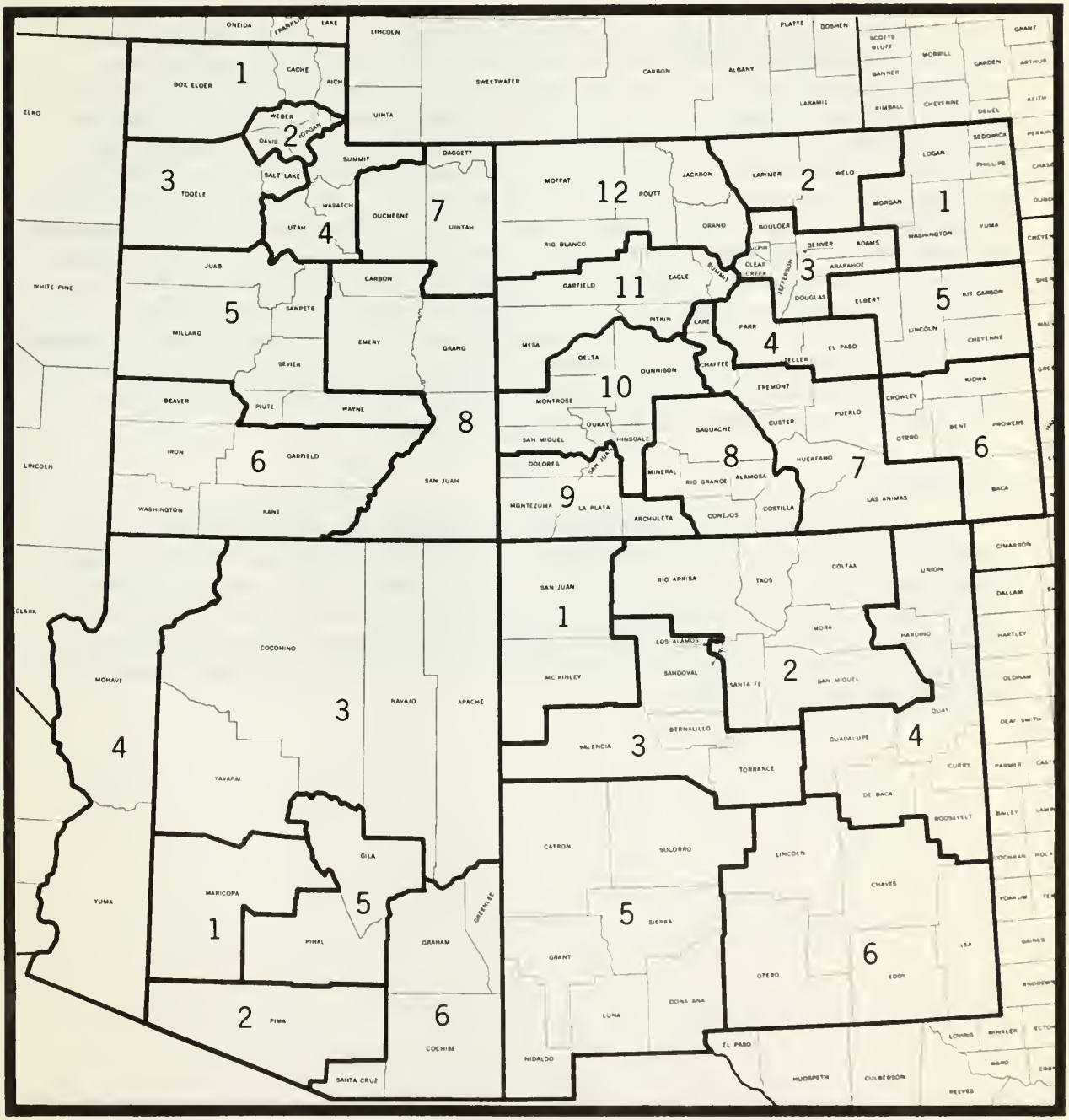
1. An economic structure submodel, formulating the region's industrial mix for a decade. It incorporates sector studies on the feasibility of manufacturing, minerals and fuels, tourism and recreation, agriculture, transportation, and manpower development. The detailed industry list includes upwards of 50 categories. The economic model acts first to ascertain the economic feasibility of the target industries, their linkages and appropriate proportions, and their increments of growth to 1980. This general regional industry model feeds to the physical location model the selection and size of industries, characteristics of dominance and interindustry dependency, threshold sizes, relative mobility, etc. In turn, it reads back from the location model the district allocations and combinations of industry which will indicate infrastructure and social overhead requirements in addition to scaling basic industrial investment.

2. A physical location submodel uses CMS to deploy the industrial growth (and decline, as in some mining and agriculture)

1/ At this writing, two-thirds of the states have subdivided their territory into planning districts - 206 metropolitan and 150 non-metropolitan areas, containing some 80% of the U.S. population.

FIGURE 6

32 STATE PLANNING DISTRICTS USED IN ALLOCATING REGIONAL INDUSTRY GROWTH



over the 32 districts, according to appropriate resource combinations, industrial mobility, and locational policy factors. It does this by taking the industries in order of dominance, size, and resource requirements; solving first for their optimal locations (OPLOC), and then using these OPLOC maps as locational factors with certain weights in the location of subsequent industries. Thus, all significant dependencies between the region's industries are built into the location model.

When optimal locations have been assigned for all target industries, district advantage scores are translated into employment growth (or decline, as the case may be) for each and all industries, all controlled by the regional economic projections of employment. Thus the 1980 employment composition of each district is outlined for the target industries. This makes it possible to estimate additional local employment and the total population of each district. Any desired corrections for deficiences in social facilities, such as education, health, housing, and municipal services in districts, may be cranked into the estimates of service employment. This summary table of each district's projected 1980 mix of industry employment provides a broad and sound basis for further estimation of population and income, and for specialized planning by federal, state and local bodies, utilities, public service agencies, banks, and industries. Such a planning basis is possible to derive only through a regional approach.

Conclusion.

CMS can fill an important gap in regional planning procedure by bringing into use great quantities of locational information which have heretofore defied practical comparison. It has a wide range of uses, from simple condition mapping to multi-industry sequential location simulation. But its real value depends on systematic regional planning, in which it can serve as the locational link between economic models and infrastructure designs.

DESCRIPTION
OF
RESEARCH AND TRAINING PROJECTS

STUDIES IN URBAN DEVELOPMENT

Performing Organization:	University of California, Berkeley	Monitoring Agency:	EDA - Office of Economic Research
Principal Investigator:	William Alonso	Project No.	99-7-13106.1

Objectives and Procedures: This research focuses on the development of the system of American cities, attempting to relate theoretical analysis and empirical findings to policy issues. This grant is a continuation of the earlier "Studies in Regional Development and Planning," and, as in the work performed since 1967, the studies under this program will continue to query theory and experience with growth poles, patterns of migration, complex issues of city size, and relation of the depressed hinterlands (e.g. Appalachia) to systems of urban centers.

During the current year, plans are to concentrate on completion of the simulation model of the U. S. metropolitan area system, employing it to project emerging growth trends and test policy alternatives such as maximizing personal income, minimizing interregional differences, and the types and amounts of subsidy needed to sustain growth in lagging regions. Emerging as well as older metropolitan areas will again be studied with reference to their impact on patterns of urbanization. Analysis of the social and environmental as well as economic aspects of the correlates of urban size may be explored. The role of smaller metropolitan areas as centers for growth in population and economic activity within megapolitan areas will be further examined, as will welfare and economic impacts on the populace of declining areas.

Current Developments: Results of the analysis of relationships among cities of different size have been described in three recently received papers:

In "Cost of Living and Income by Urban Size," William Alonso and Michael Fagan explore the thesis that living cost increases accompany

increases in size of urban place. Although the available data and techniques are relatively fragile, the paper examines the association of income and urban size. It is concluded that consumer costs rise slightly with urban size but not enough to offset the rise in income with urban size.

In "Spontaneous Growth Centers in Twentieth Century American Urbanization," William Alonso and Elliott Medrich examine spontaneous, as distinguished from induced, growth centers. The paper describes the magnitude of the role of spontaneous growth centers in the urbanization of the American population since the turn of the century through a time series on the population living in the 212 SMSA's (1960 definition) between 1900 and 1965. An appendix presents both the population and the decennial growth rates for these SMSA's for each of the decennial years and for 1965. The authors advocate a national growth policy which concerns itself with the spontaneous, as well the induced, growth center.

"The Economics of Urban Size," by William Alonso is concerned with the theory of city size and the relation of the size of a city to its population in a system of cities. Definitional problems are raised and traditional studies concerning public costs reviewed. An extensive discussion of the general rise of product per capita with increased urban size is presented, including data from Japanese, German, and American experience. Weak indications of a turndown in the product curve at the largest urban sizes are presented. It is concluded that this is not inconsistent with the view that these larger sizes are efficient within a hierarchical system of cities. Dr. Alonso emphasizes that parallel analyses of variations in productivity and variations in urban costs with urban size are critical for the determination of policy on urban growth. He also notes that dynamic, as compared with static, models are needed for appropriate appraisal of policy recommendations.

Status: Project ending December 1970 is being continued under a new grant ending February 1972.

RESEARCH AND TRAINING PROGRAM IN REGIONAL DEVELOPMENT POLICY & PROGRAMMING

Performing Organization:	Center for Urban Studies, University of Chicago	Monitoring Agency:	EDA - Office of Economic Research
Principal Investigator:	Brian Berry	Project No.	99-7-13010.2

Objectives and Procedures: This research project continues work funded previously by the EDA Office of Economic Research and has four objectives:

1. Assessment of the growth potential and area of economic influence of each urban center in the United States, especially examining the effects of location and size on growth prospects.

2. Analysis of the relationships between migration, incomes, and employment opportunities, so that the likely effects of relative income and employment shifts on cityward population flows can be estimated.

3. Study of the multiplier effects of employment expansion on regional incomes in the United States, looking at such issues as the source of growth, the level of income resulting, and the stability of the effects.

4. Beginning of an analysis of industrial decentralization potentials, emphasizing those factors that may be supportive of regional development programs, and completion of a supporting theoretical examination of the tradeoffs between trade and factor mobility.

Current Developments: The second topic above has been completed. Two monographs have been printed:

"Migration and Regional Development in the United States, 1950-1960," by Paul J. Schwind.

"Reservation to City: Indian Urbanization and Federal Relocation," by Elaine M. Neils.

The final report on topic three is now being written. This work has involved an areal disaggregation of the U.S. into 173 urban systems for examination of the issues mentioned above. The grantee has worked closely with the Regional Economics Division, Office of Business Economics, U.S. Department of Commerce, on this phase of the project.

For topic one above, the definition of the U.S. urban hierarchy on a consistent national basis has been completed. The final report will include 1960-1970 population change data and the final construction of maps.

The report on the hierarchial diffusion of industry is in first draft form. This, when combined with the U.S. urban hierarchy defined above, will make it possible to prepare a consistent national report on growth centers and their potentials in the U.S.

Status: Final reports on topics 2 and 4 above are expected by June 1971. Research concerning topic one is still under investigation and is expected to be completed within the following year.

THE CHANGING STRUCTURE OF EMPLOYMENT AND INCOME IN THE UNITED STATES

Performing Organization:	University of Georgia	Monitoring Agency:	EDA - Office of Economic Research
Principal Investigator:	Charles F. Floyd	Project No.	99-8-00033.1

Objectives and Procedures: This project represents an extension in the scope of work performed by Professor Floyd for the Coastal Plains Region. Employment and income data for the period 1950-1967 have been developed on a uniform, consistent basis for the purpose of analyzing structural changes in Title V Regions. The data are analyzed to determine the extent to which each region has lagged behind the nation and projects a continuation of historic trends to 1975 to estimate the magnitude of the income gap. These projections provide an effective tool by which to guide and appraise investment plans and strategies being developed for Title V Regions.

Findings: A series of six reports provide the basic employment and income detail with analysis of the structural changes which have occurred in the regions of the U.S. with particular attention to the Title V Regions. The lagging performance of each of the Title V Regional economies is analyzed and compared to the national performance and areas of strengths and weaknesses identified.

The six reports are:

The Changing Structure of Employment and Income in the

- o Coastal Plains Region
- o Upper Great Lakes Region
- o Four Corners Region
- o Ozarks Region
- o New England Region
- o U.S. SMSA and Non-SMSA Areas

Status: Completed. Final reports have been received for the Coastal Plains, Upper Great Lakes, Four Corners, and Ozarks Regions. The remaining reports are expected by the end of May 1971.

REGIONAL ECONOMIC DEVELOPMENT SEMINAR

Performing Organization:	Harvard University	Monitoring Agency:	EDA - Office of Economic Research
Principal Investigator:	John P. Kain	Project No.	99-7-13009.2

Objectives and Procedures: The research program of this grant is designed to provide EDA with a set of studies which would aid in formulating and underscoring economic development priorities with respect to agency and national rural development policies and urban strategies. The program is concerned with four major areas: 1) A study of the economic development of low-income and depressed regions, the determinants of interregional migration, and the impacts of this migration on interregional growth and development; 2) A comparative cost analysis of industrial location in the inner city and suburbs; 3) An evaluation of the effects of proposed family assistance and income maintenance programs on regional growth rates; and 4) The formulation of a national growth policy. The questions at issue here include the optimal distribution of growth: (a) among regions, (b) by size of place, and (c) between the central and outlying portions of large metropolitan areas. Additionally, a regional economic survey text is being prepared which includes a synthesis of the state-of-the-art in regional economic analysis and policy.

The training program includes 1) three single-semester graduate courses in regional economics; 2) two single-semester undergraduate courses, one in urban and the other in regional economics; 3) two single semester workshops. These provide for the exchange and presentation of regional and urban economic development research findings by faculty and students; 4) fellowship support for 10 to 12 doctoral candidates in regional economics; 5) part-time and summer research by Harvard faculty; and 6) support for scholars and post-doctoral fellowships.

Current Developments: Since the last issue of The Research Review the following research papers have been received:

- "How to Improve Urban Transportation at Practically No Cost," by John F. Kain.
- "An Equilibrium Model of Regional Growth - The Case of the United States," by Koichi Mera.
- "A Historical Model of Urban Form," by David Harrison, Jr., and John F. Kain.

- "National Priorities for Regional Development," by John F. Kain.

In the latter paper, the author examines two crucial issues bearing on the prospects for southern economic development and the elimination of southern poverty: responsiveness of interregional migration caused by nonmarket forces, such as differentials in welfare payments and what effect the Family Assistance Plan (FAP) would have in eliminating differentials in per capita income between the six core states of the South and the rest of the nation. Welfare payment differentials induce more migration to areas providing a higher level of service. The welfare of the poor could be increased at less economic cost by equalizing public nonmarket provisions at migration source areas. A narrowing of existing differences in the quantity and quality of public nonmarket goods and services would mean some redistribution from wealthier to poorer regions. This could lead to more adequate investment in human resource development, in which case, the wealthier regions would actually benefit through a diminished flow of the unskilled to ghetto areas.

Estimates prepared by Professor Kain indicate that more then 800,000 families in the six states of the core South would be eligible for Family Assistance (FAP) under the Administration's plan. Income of these families would rise to approximately $3400 per year, compared to $2200 without the transfer payment system. Aggregate transfers to the core South would be nearly $1.0 billion. If restrictions on eligibility were removed to allow inclusion of impoverished, unrelated individuals, and couples without children, including the elderly, an additional 700,000 households in the core South would be eligible. Additional transfer payments would then amount to approximately $400 million. With the stimulus provided by FAP, a national program aimed at eliminating income discrepancies coupled with manpower development programs, plus capital subsidies in the form of business loans and community facility loans would accelerate southern economic development and make that region competitive with the more prosperous areas of the country.

Status: Final report is expected June 1971.

THE MUNICIPAL INFORMATION SYSTEM RESEARCH PROJECT

Performing Organization:	Urban Information Systems Inter-Agency Committee	Monitoring Agency:	HUD (USAC)
Principal Investigator:	Dr. William Mitchel	Project No.	99-7-13181

Objectives and Procedures: The primary objective of this project is to stimulate the development of prototype municipal information systems which will improve the information and decision-making capabilities of participating municipalities, and, with a minimum of revision and conversion, to provide a base for broader application to other municipalities throughout the nation. The Urban Information Systems Inter-Agency Committee (USAC) is sponsoring this effort to establish appropriate data for inclusion. Six Federal Agencies are participating (HUD, HEW, Labor, DOT, OEO, and EDA). The project, begun in 1970, is projected to run for a three-year period.

An integrated municipal information system and four component subsystems developed under this program are to be operationally based and to be built upon existing developmental efforts of the municipality. The project has utilized the services of the National League of Cities in association with the U.S. Conference of Mayors and International City Managers Association in securing expressions of interest from municipalities with populations of 50,000-500,000, who wish to install the pilot systems. The National League of Cities also participated in developing the technical evaluation criteria by which the responses of the municipalities were appraised and six cities selected. The program is now underway in Charlotte, North Carolina; Dayton, Ohio; Reading, Pennsylvania; Wichita Falls, Texas; Long Beach, California; and St. Paul, Minnesota.

Current Developments: HUD's USAC project staff has recently been placed as an operating activity in the Office of Harold B. Finger, HUD's Assistant Secretary for Research and Technology. Secretary Romney has announced the appointment of Dr. William H. Mitchel as the new Chairman of USAC.

The work programs for each of the six USAC projects are designed to produce early operational demonstrations significantly in advance of project completion, of representative portions of the information systems that each is developing. These demonstrations are tentatively planned for mid-1971.

A group of USAC Program products will be made available for wide distribution in the near future by the National Technical Information Service (NTIS), U.S. Department of Commerce, Springfield, Virginia, 22151. The reports and publications are scheduled to be available for distribution from NTIS according to the following schedule:

Product	Month
Orientation Briefing Guide and Brochure for the Charlotte, North Carolina, Project	January 1971
Systems Analysis Task Completion Report for:	
Dayton, Ohio	February 1971
Wichita Falls, Texas	February 1971
Long Beach, California	February 1971
State-of-the-Art of Municipal Information Systems	March 1971
Management Introduction to Municipal Information Systems	March 1971

Status: This is a 3-year project which began in March 1970.

DIMENSIONS OF THE URBAN PROBLEM AND A NATIONAL POLICY FOR URBAN DEVELOPMENT

Performing Organization:	Massachusetts Institute of Technology, Laboratory for Environmental Studies	Monitoring Agency:	EDA - Office of Economic Research
Principal Investigator:	Lloyd Rodwin	Project No.	99-7-13158

Objectives and Procedures: To provide EDA with quantitative analyses and projections of the evolution of the urban ghetto economy within the framework of the dimensions of the urban problem and urban growth patterns. Simple mathematical models are utilized.

Current Developments: Several complementary studies have been completed. These include: manpower demand, nonwhite manpower supply and targets for jobs for nonwhites; benefit-cost evaluation of ghetto resident employment policies; intrametropolitan location and the public sector; housing and job access for the urban ghetto labor force, cash-flow analyses of Community Development Corporations; and urban economic growth models. Research papers are listed by major project activity and project findings and are described below.

1. Cities and Ghettos; New Directions and Future Alternatives. Analyses of the recent evolutions of the economy of our large cities and ghettos with projections to 1980 and assessments of growth potentials and their implications.

"Role of the Central City in the Metropolitan Area Economy: A Cross-Section Analysis," by Dasharathi Bisuas.

"Our Large Cities: New Directions and New Approaches," by Alexander Ganz. This study points up the fact that the economies of large central cities of standard metropolitan areas have taken a decided upturn in recent years, and the prognosis for their economic future is promising. The number of central city jobs is no longer decreasing; higher-skill and higher-wage service activity jobs are replacing lower-paid manufacturing jobs; productivity is increasing; output and income are expanding; population is stabilizing. In addition, Federal policies and programs appear to be shifting more of the emphasis from the suburbs to the central city, thus offering hope for the alleviation of the fiscal squeeze in which cities are now caught. In recent years the movement of Negroes to the suburbs has accelerated. Also, the gap between the overall educational attainment of whites and Negroes has narrowed, as has the relative gap between Negro and white household income. Black professionals and skilled workers are entering the ranks of the higher grade occupations at a greatly increased rate. There are also many new initiatives evident in the ghetto,

including community-based enterprises, as well as both public and private projects, which reflect a new mood and a new potential for the ghetto.

The gap between the white and black population is still formidable and in some respects even more discouraging than in the past. Moreover, the progress to date can easily be inhibited, or even arrested, by a slowdown in the national economy, by widely prevalent discriminatory practices which place barriers to the upward mobility of blacks, and by the failure of local and national policymakers to take enough vigorous measures to ensure improved access to jobs and other opportunities.

2. Urban Economic Growth Models. Development of quantified models of postwar and prospective urban economic growth for large metropolitan areas:

"Economic Evaluation of Urban Development,"

"Equilibrium Growth with Fixed Capital,"

"Linear Decision and Control,"

"Mathematical Models of Economic Growth,"

"On the Duality Between Allocation and Valuation,"

"Towards an Optimal Economy," all by Duncan MacRae; and

"Urban Development Banks Corporations," by Duncan MacRae and Robert Crandall.

3. Manpower Demand, Nonwhite Manpower Supply and Targets for the Penetration of Higher Grade Occupations. Studies to provide a basis for establishing targets for employment and upgrading of nonwhite labor force, taking into account growth and change in occupational structure in the nation as a whole (all by Manuel Zymelman):

"Analyses & Projections of Employment by Industry and Occupation in Ten Large Metropolitan Areas."

"Analyses of Socio-Economic Characteristics of Recent Labor Force Growth & Migration in the New York Metropolitan Area, 1960-1965."

"Job Creation & Occupation Upgrading for the Non-white Labor Force in Eleven Large Metropolitan Areas."

"A Manpower Model for Urban Ghettos."

Findings: Areas with similar rates of growth in total employment, and even with similar sizes of total population, present different patterns of development for the different occupational groups. An example is that of the New York and Los Angeles areas with anticipated growth of total employment between 1960 and 1975 of 28 and 30 percent, respectively. Whereas in New York the demand of operatives is expected to increase by 6 percent, in Los Angeles the demand will decrease by 4 percent.

There are unmistakable signs that the future demand for major occupation groups such as operatives and craftsmen with higher entry barriers are not very bright. As a general rule only areas with a high rate of growth of employment will experience a positive rate of growth for these two occupations groups. This may have grave implications for the choice of training and investment policies. It may mean that the opportunity for employment for the incoming age groups into the labor force for operatives is not very good. Moreover, the concentration of efforts to train people for this particular occupation group may be only a shortrun measure and be wasted in the long run unless people already in this group are retrained and upgraded at a fast pace.

The shrinking of jobs for the group of craftsmen with higher entry barriers also poses serious problems. Efforts of pushing for extra jobs for minorities in these occupations, other things being equal, will, therefore, yield better results in metropolitan areas where employment for this occupation group is expanding, as in New Orleans and Baltimore.

The project findings suggest that unless there is a serious effort to change the pattern of occupational choice of the incoming groups to the labor force by gearing it to white collar jobs we cannot expect drastic changes in relative income positions of nonwhite groups. An improvement will always come by putting an unemployed person to work or upgrading an unskilled worker to the rank of operative, but these changes will not be significant since they deal only with marginal improvements in income and with slow growth occupations. Additionally, the study points out that occupation gains for nonwhites were not matched by wage gains, and that nonwhite manpower goals and programs must focus on job upgrading of both occupations and income.

4. Benefit-Cost Evaluation of Ghetto Resident Employment Policies, by Jerome Rothenberg.

Study concerns the problem of comparing the efficiency of different public programs to increase employment for ghetto residents. Benefit-cost analysis is applied to four major types of programs: 1) enhancement of human capital through manpower training, both of an off-and on-job variety; 2) improvement of the mobility of labor through subsidized investment in transportation facilities; 3) increase of the

accessibility of jobs to ghetto workers by enlarging the availability of appropriate housing units near growing employment modes; 4) increase of the accessibility of jobs to ghetto workers by subsidizing the location of new employment sites in or near the ghetto.

Findings: Program 1: Training programs to upgrade skills are promising, but their effectiveness is especially enhanced when they are connected to actual jobs at termination, as in on-the-job training. On the other hand, no dramatic social payoffs seem forthcoming if only the traditionally measurable sources of benefits and costs are tallied. Program 2: Investments to improve the transportation of ghetto workers to growing suburbanized job centers are unlikely to be effective in a substantial scale unless they are coordinated with other types of programs as, for example, skill upgrading. Program 3: The effect of housing integration in employment is difficult to disengage from skill, motivation, and socializing factors. It is likely to be at least as important as transportation investments, but its full contribution must be evaluated in the larger contexts of ghetto dispersion and social integration. Program 4: Subsidization of business within the ghetto is less effective in promoting ghetto resident employment than are financial incentives to hire such residents on the part of metropolitan businesses generally, especially in programs associated with on-the-job training. Subsidization of various forms of ghetto business or development are more significant for a variety of goals related to, but not identical with, the one studied here.

5. Local Government, Intrametropolitan Location and the Efficiency of Resource Utilization. Examination of the factors which lead to the jurisdictional clustering of poverty within metropolitan areas, its impact on the capacity of the local public sector to ameliorate the problem, and the influence that this capacity has upon the spatial distribution of the poor and their consumption and production opportunities (all by Jerome Rothenberg):

"Local Decentralization and the Theory of Optimal Government."

"Strategic Interaction and Resource Allocation in Metropolitan Intergovernmental Relations."

"The Impact of Local Government on Intra-Metropolitan Location."

6. Housing and Job Access for the Urban Ghetto Labor Force. Examination of the extent to which discrimination and maladjustments in the housing market have impeded opportunities of the nonwhite labor force (by Irving R. Silver):

"A Study of the Demand for Housing in a Metropolitan Market."

"Non-Whites in the Metropolitan Housing Market."

Findings: One of the evils of housing discrimination is that it limits the access of the nonwhite population to surburban housing which might enhance access to suburban jobs. Open occupancy laws promise to reduce this discrimination. Even if many of these barriers are dislodged, a whole history of discrimination and segregation has created a preference among a large proportion of the black population to live in nonwhite neighborhoods. For this reason, many persons question whether the absolute level of the nonwhite urban ghetto population can be expected to diminish appreciably in the near future; and it infers that a consequence of this preference will be drastically limited job opportunities for the black population.

7. A Cash-Flow Analysis of Community Development Corporations. A simulation study of cash-flows of community development corporations over a twenty-year period under a number of alternative assumptions.

"A Simulation of Some Possible Outcomes of the Proposed 'Community Self-Determination,'" by Matthew Edel.

Findings: The cash-flow analyses model used a number of assumptions with respect to industry mix, capital-value added ratios, wages-value added ratios, and government subsidies required. It was assumed that, in the first four years of operation, there would be concentration on the purchase of existing enterprises, especially retail establishments, with a corresponding low yield in new employment creation. Thereafter, it was assumed that investment would be in new enterprises including new industrial ventures with a higher return in profitability and employment creation. The creation of employment is assumed to return new taxes to the government, or to allow a reduction in welfare expenditure by the government at a rate equal to 15 percent of earnings. Loans to the CDC would be for twenty years, repayment would begin after the fifth year, but interest on the loan would begin in the second year. By the ninth year, under these assumptions, interest and amortization charges would exceed the value of new loans, and the government could expect to be a net beneficiary. By the tenth year the government would be collecting more than it would be spending, and over the entire 20-year period the government would take in more in taxes than it would be estimated to spend. Under these assumptions, it determined that if the interest rate for the CDC's was kept at 7 percent, they could generate a surplus for community services, as well as creating employment. On the other hand, an interest rate of 9 percent eliminated most of the surplus.

8. A National Policy for Urban Growth. Drawing on the analyses of the evolution of the facets of government policy past, present and potential, which shape the pattern of urban and regional development, a

conceptual framework for the formulation of a national strategy for urban growth can be designed. The resulting reports take into account perspectives for interregional and intrametropolitan area growth, urban ghetto and central city needs for jobs and economic development, and alternative mixes of measures and programs. Work done thus far is preliminary in nature. Two reports received, both by Lloyd Rodwin:

"Urban Growth Strategies Reconsidered,"

"New Towns, Urban Growth Strategies & Transportation,"

focus on the distinctions between the needs of faster growing regions, slower growing regions and depressed regions, including ghettos of central cities.

Other completed papers received are:

"The Demand for Participation in Large American Cities," by Alan Altshuler.

"The Boston Manpower Programs," by Dorothy Denfield.

"The Professionalization of the Police: An Essay on the Limitation of Institutional Change in Urban America, 1890-1970," by Robert M. Fogelson.

"The 1960's Riots: Grievances and Restraints," by Robert M. Fogelson.

"Citizen Participation in the Model Cities' First Rows," by Langley Keyes and Lisa Peattle.

"Catalogue of Present and Proposed Job Creation and Job Upgrading Measures," by Duncan MacRae.

"Urban Development Banking in the United States--An Initial Feasibility Study Based on Simulated Financial Statement Projections," by J. D. Nyharb.

"Public and Private Responsibilities in On-the-Job Training of Disadvantaged Workers," by Michael J. Piore.

"Private Enterprise and the Poor - Does a Partnership Make Sense?" by Robert S. Robin.

Status: Final report expected Spring of 1971.

REGIONAL ECONOMIC PROBLEMS, HUMAN CAPITAL, AND THE LABOR FORCE

Performing Organization:	National Bureau of Economic Research	Monitoring Agency:	EDA - Office of Economic Research
Project Director:	Jacob Mincer	Project No.	99-7-13152

Objectives and Procedures: The research under this grant relates to regional economic problems focusing primarily on human capital and labor force considerations. Joseph Persky is analyzing off-farm migration in the South and the location of manufacturing employment there. David Gordon is examining alternative explanations of ghetto employment problems including the stratification of the labor market. Masanori Hashimoto and Jacob Mincer are working on the analysis of minimum wage legislation and how it relates to regional unemployment patterns. Drafts are now being reviewed by the NBER for a publication by Gary Becker, Barry Chiswick, and Jacob Mincer on income distribution, regional wage differentials, unemployment and migration.

Current Developments: Drafts of two manuscripts have been received. The first is a study by Jacob Mincer entitled Schooling, Age and Experience. In this study, earnings are related to training on the job, other human capital investments following schooling as well as to schooling itself. By admitting into the model variations in investments and productivity among individuals within schooling groups and after completion of schooling, insights are obtained about the distribution of earnings within age-education groups, and in the aggregate.

The second manuscript is a study by Masanori Hashimoto and Jacob Mincer entitled Employment and Unemployment Effects of Minimum Wage. This paper adds a systematic analysis of supply effects to the usual treatment of demand effects, and explores empirically the simultaneous and interrelated effects of minimum wages on several selected labor force groups in the U.S. economy.

Status: This grant began in June 1970 and expires in June 1971. It is a continuation of an earlier grant which began in June 1968.

RESEARCH AND TRAINING IN REGIONAL ECONOMIC DEVELOPMENT

Performing Organization:	University of North Carolina	Monitoring Agency:	EDA - Office of Economic Research
Principal Investigators:	Clifton H. Kreps, Jr. and Hugh W. Know	Project No.	99-7-13157

Objectives and Procedures: This grant supports research under the topics: 1) Econometric Studies of Regional Productive Capabilities, and The Transmission of Changes in the National Economy to Lagging Regions; and 2) Improving Accommodation of Local Capital Formation in Economically Underdeveloped Areas. Professor Kreps is conducting the capital formation studies, with special reference to the Southeastern States in general and the Coastal Plains Region in particular.

Current Developments: The training program supported three summer training fellowships the first summer and five the second, and several research assistantships throughout.

Recently received was an econometric model of the three Coastal Plains States: North Carolina, South Carolina, and Georgia. The model consists of 48 equations, of which 31 are stochastic and the remaining 17 are identities, establishing links between many important macroeconomic variables for the region. All of the data are expressed in constant (1958) dollars.

Four groups of equations are used to explain gross products, personal income, wages, and employment for each of nine sectors (gross output was also determined for a tenth, miscellaneous sector). The nine sectors are: agriculture; mining; contract construction; manufacturing; wholesale and retail trade; finance, insurance, and real estate; transportation, communication, and public utilities; services; and government. For most of the equations, gross products were determined by demand variables. Personal incomes of wage and salaried workers is the product of the average wage or salary times employment. Employment is made a function of output, and wages are explained by the productivity of labor. A last group of equations explores other miscellaneous aggregate variables such as migration, consumption, residential investment, and others.

One of the reasons for building this econometric model for the three states was to assist in forecasting their future level of economic activity. This model, called the Coastal Plains States model, was simulated by year for the years 1950 through 1967 and made forecasts for 1968 through 1980.

Also received and now under review is a study by Professor Jack L. Cooper entitled "The Growth and Importance of State and Local Retirement Funds in the Capital Market of the Southeast." The essay attempts to provide some evidence about the types and volumes of capital leakages (exports) of local capital into nonlocal investments via state and local retirement funds, to describe probable causes of such capital outflows, and to assess the feasibility of eliminating these leakages. The methodology used includes examination of time series data, detailed cross-sectional analysis of the investment portfolios of a number of the region's state and local retirement funds, and descriptions of internal and external influences on portfolio policies obtained from responses of fund managers to questionnaires covering activities of various funds.

Additional work nearing completion is:

W. C. Hale, The Effect of Banking Structure on the Distribution of Capital Formation in North Carolina.

D. S. Shannon, Determinants of Risk Premiums for North Carolina Municipal Bonds.

R. W. Phillips, The Use of Commercial Bank Time and Savings Deposits to Finance Local Capital Formation.

H. E. Wyman, Activities of Small Business Investment Companies in North Carolina

Faculty research: at other institutions

J. L. Cooper (University of Tennessee), The Growth and Importance of State and Local Retirement Funds in the Capital Markets of the Southeast.

O. S. Pugh (University of South Carolina), The Significance of Municipal Industrial-Development Revenue Bonds in Facilitating Local Capital Formation.

C. H. Ufen (North Carolina State University), Financing Activities of the Business Development Corporation of North Carolina.

Status: This grant which began in June 1968 expires in May 1971.

ESTIMATES OF PERSONAL INCOME BY COUNTY; and MIGRATION BY LOCAL AREAS

Performing Organization:	Regional Economics Div., Office of Business Economics	Monitoring Agency:	EDA - Office of Economic Research

Principal Investigators: Edwin J. Coleman (Personal Income)
David Hirschberg (Migration)

Project No. 99-7-13130 (Estimates of Personal Income)
99-7-13180 (Migration by Local Areas)

Objectives and Procedures: The Regional Economics Division of OBE has developed a package of regional economic information useful for development planning and analysis. These data include comprehensive estimates of total personal income, by type and industrial source, and per capita income covering substantially all counties of the United States for selected years 1929-1969, and the 1-percent sample of persons with Social Security numbers.

Current Developments: A tape record of these data has been delivered to EDA and is available for use. Analysis of regional or areal trends are possible since geographic definitions are held constant over the entire period for which estimates are made. The local area estimates (on a county basis) are tied directly to the Office of Business Economics official estimates of personal income by States.

Another component of the regional economic information system of OBE provides measurements of resident migration and migration streams. This information is based on the continuous work history sample of the Social Security Board which has been made operational by the Office of Business Economics. Data are available for the 1960-1967 period - this is a 1-percent sample of all persons who have a Social Security account number. From these records analysis has been made of the extent and direction of migration, the characteristics of movers and non-movers with particular emphasis on EDA districts and areas.

Status: Project is funded through June 1971.

THE ROLE OF GROWTH CENTERS IN REGIONAL DEVELOPMENT POLICY

Performing Organization:	University of Kentucky/ University of Texas	Monitoring Agency:	EDA - Office of Economic Research
Principal Investigator:	Niles Hansen	Project No.	99-7-13156

Objectives and Procedures: The research program under this grant is designed to provide EDA with a set of studies which would relate growth center theory to the implementation of growth center strategy for accelerating economic development of lagging areas of the United States. The program concentrates on four objectives: 1) To improve the theoretical and empirical knowledge of the nature and roles of growth centers; 2) To compile and organize data pertinent to an evaluation of programs that might be encompassed in a growth center strategy; 3) to delineate problems which are likely to be encountered in the implementation of a growth center strategy, and to indicate possible solutions; and 4) to set forth criteria for the selection of urban centers to be included in any attempt to apply a growth center strategy.

The training program includes instruction at the graduate level in courses in growth center theory and regional economics; seminars for faculty and advanced students in growth center research and regional and area economic development; support for graduate research assistantships; and supervision in the preparation of doctoral dissertations related to the growth center program.

Current Developments: With the transfer of Professor Niles Hansen from the University of Kentucky to the University of Texas at Austin, this project was adjusted to allow for work at both Kentucky and Texas. The research funded from this project at the University of Texas is now complete. Dean Charles F. Haywood and Professor Alan R. Winger have been directing the Kentucky program since Professor Hansen's departure.

Since the last issue of The Research Review the following papers have been received:

University of Kentucky

"Supply Oriented Urban Economic Models," by Alan R. Winger.

"Locational Preferences and Opportunity Costs in a Lagging Region: A Study of High School Seniors in Eastern Kentucky," by Niles Hansen and Richard Yukhin.

"Sources of Variation in Overhead Capital Investment with Application to Economically Lagging U.S. Counties," by Duncan R. Miller and Richard Thalheimer.

"The 'Perfect' Regional Adjustment Mechanism: A Reappraisal," by Charles W. Hultman.

"Non-Market Income and Out-Migration in Lagging Regions," by William R. Russell and Alan R. Winger.

"Taxes, Subsidies and Locational Choice," by William J. Stober.

University of Texas at Austin

"Selecting Growth Centers," by N. Dann Milne.

"Growth Center Determination for Del Rio," by Burtis Lawrence.

"Criteria for a Growth Center Policy," by Niles Hansen.

"The Influence of Relative Wages and Assisted Migration on Locational Preferences: A Study of Mexican Americans in South Texas," by Niles Hansen and William C. Gruben.

"The Lower Rio Grande Valley Development District: A Case Study in Development," by Thomas Till.

"Migration Centers, Growth Centers and the Regional Commissions: An Analysis of Expected Future Lifetime Income Gains to Migrants from Lagging Regions," by Niles Hansen.

Findings: The growth center strategy derived from the research findings of Professor Hansen and his associates emphasizes that in order to achieve social gains of outmigration and relieve inmigration pressures on large metropolitan areas, it is desirable for EDA to stress concentration of investment in reasonably large centers located in potential growth areas instead of attempting to accelerate the growth of lagging areas by providing them with large amounts of economic overhead in the form of fixed facilities or attempting partial measures to solve urban problems. The most urgent need in lagging areas is for investment in human capital.

The intermediate-size city is stressed as the focal point for the growth center strategy. In order to reduce congestion and other external diseconomies in overcrowded urban areas, migration should be rechanneled to growing cities in the 50,000 to one million population range, more particularly in growing cities in the 250,000 to 750,000 range. Only those cities within the size limits that could be expected to benefit a significant number of persons from lagging regions should be eligible for designation as growth centers. Papers on locational preferences of lagging area residents, area development problems, regional growth centers, agency growth center experience, banking behavior in lagging areas, and housing market for the low income migrant backup and reinforce this strategy.

Status: University of Kentucky - completed March 1971. University of Texas - project ended December 1970 and is being continued under a new grant ending May 1971.

ECONOMIC DEVELOPMENT OPERATIONS AND PROCESSES

INDUSTRIAL LOCATION DETERMINANTS STUDY

Performing Organizations:	Boise Cascade-Urban Development Corp.; Bureau of the Census; Consolidated Analysis Center, Inc. (CACI)	Monitoring Agency:	EDA - Office of Economic Research
		Project No.	99-7-13170

Objectives and Procedures: This project is designed to assist economically lagging areas to do a more effective job in the planning and analysis necessary to attract new industry. Critical and important locational requirements of several hundred growth industries will be identified and the relative importance of a significant number of locational determinants will be appraised from responses secured from leading industrial firms. Human, physical, and locational resource data are also being assembled for each of the depressed areas to provide a geographic basis for matching to industrial location requirements. An industrial planning service, which will be a computerized service for matching industry locational requirements with area resources and capabilities, is anticipated as the final product of this project.

This project is proceeding on two fronts. Area profiles and resources are being prepared through the resources of the EDA staff members and the cooperation of community leaders. Boise-Cascade Urban Development Corporation has identified and analyzed the characteristics of the faster growing manufacturing industries in the country. In addition, the contractor is preparing reports for 25 industries which have a special affinity to urban areas and possibly for minority-group entrepreneurs. These are of special benefit to the work of the Office of Minority Business Enterprise (OMBE), Department of Commerce.

The Bureau of the Census will canvass the leading firms in some 250 industries and serve as the collecting and compiling agent for EDA. Two report forms will be mailed to each company in the survey: One will relate individual operating plants of the firm to their locational requirements; while the second will relate planned or projected new

facilities of the company to their locational determinants and objectives. Approximately 8,000 companies operating plants in the 250 industries will be contacted.

The survey is expected to be completed and the results tabulated in approximately six months.

Status: Future developments will depend largely upon the results obtained in the mail survey. It is possible that companies will be contacted once again to secure additional information or to clarify findings of the survey. The Industrial Planning Service concept will be tested when the data base is incorporated into the Agency's computerized information system.

COORDINATION OF PUBLIC AND PRIVATE DECISIONS IN PLANNING AND ALLOCATION OF RESOURCES FOR REGIONAL DEVELOPMENT

Performing Organization:	Brandeis University	Monitoring Agency:	EDA - Office of Economic Research
Principal Investigators:	Stephen Cohen and Norton W. Long	Project No.	99-7-13144

Objectives and Procedures: The hypothesis underlying this study is that coordination of private and public decision-making increases the effectiveness of the planning process. The study examines how the allocation of private resources meshes with the allocation of public capital and the processes, both formal and informal, through which coordination is achieved in different planning efforts. A general model for a planning process that will increase the participation and responsibility of private decision-makers in every stage of the planning process is developed.

Detailed inquiry into public and private planning decision activity in four areas was undertaken to provide an empirical base for the model. Planning experiences studied are: 1) national planning (France), 2) State wide regional planning (Connecticut), 3) local planning (Boston's South End), 4) Rural planning (EDA's approach to planning in rural areas).

Findings:

1. French National Planning

The study of French national planning is placed within a historical and social context and focuses on the interplay of a changing environment and a changing planning process. The principal framework of this study is the political-economic environment in which the plan operates. The political-economic relations are the principal determinants of the plan's role and its mode of operations. For example, the coordination of public and private decisions is the very heart of French planning. Yet, almost all the coordination that has taken place has been between large business groups and the state. In short, any attempt to answer the basic question of what French planning does and how it does it must situate planning within the broader configurations of the social, economic, and political forces of French society.

French style economic planning has become an export product and those that extol the "French model" contend that it is both effective and inoffensive. Its efficacy is supported by correlation and imitation.

France has had her economic plan for more than twenty years, and during that time the French economy has maintained an average rate of growth of gross national product of 4 to 5 percent. The British study and imitate the French Plan. American city and regional planners draw models of it. The Common Market nations talk about a French Plan for Europe.

The second contention--the inoffensiveness of French planning--is based on claims that French planning is characterized by a minimum of coercion and bureaucracy and a maximum of private, decentralized decision-making and flexibility. In brief, it proclaims the total compatibility of planning, modern capitalism, and democracy. Proponents of the plan argue that some variant of the French model--the middle way between coercive central planning and disorganized, wasteful no-planning--has become a necessary element for western democratic nations.

2. State-Wide Planning (Connecticut)

Connecticut is generally considered among the most advanced states in the field of regional planning. A dimmer view is presented in this study. The parties to regional planning, particularly the Connecticut Interregional Planning Agency, have been involved in agreements of mutual accommodation rather than plans envisaging a higher and more comprehensive interest.

The Connecticut Interregional Planning Program has produced a series of literature surveys on the past and present state of the economy, the problems of open space and its preservation, housing, transportation, and land use. These surveys represent more status reports than plans. The talk of choices for action in them is rhetorical or deceptive since the ordinary citizen and the public official is presented with nothing he can concretely choose. Problems for future planning are presented but there are no planned program alternatives for solutions.

An indicative plan for a region that has a chance of success depends upon the capacity of the public and private institutions to agree on investment decisions that are within their power to make or influence. If businesses and governments can coordinate plans, then forward investment in plant, equipment, highways, utilities, educational resources, and other infrastructure so as to alter the effective locational and other relevant economic considerations, the capacity exists to make a regional plan. The chips of the regional planner are the investment decisions of businesses and governments that can be put in play to back the plan.

3. Local Planning (Boston's South End)

This study examines the political dynamics of planning for Boston's

South End. The detail presented is especially suitable for developing an understanding of the process of planning, of the various forms that planning can take, and of the political implications of each of these forms. During the time the planning process went on, the South End underwent a succession of rapid changes. These changes suggest a variety of planning possibilities. At one extreme there is Administrative Planning, i.e. planning of and with the consent and cooperation of the local "leadership" of the area. The other extreme is Participatory Planning, i.e. active participation in the planning process of articulate interest groups of the area: residents, businesses, hospitals and other interests represented by the planning authority's office. By promising generalized benefits without stipulating specific costs, the planning authority avoided arousing focused opposition until after an initial sanction was obtained for the plan.

4. Rural Planning (EDA's Approach to Planning in Rural Areas)

The planning process here ends where it should begin, with the preparation of the planning document. The document is seen as the price to pay for "keeping the office going" and for getting specific projects funded. This process is counter productive. Planning should be aimed at influencing local behavior, i.e. at getting people to do things. Two ways are suggested for EDA to begin this process: 1) restructure the OEDP by having Washington EDA transmit data to the field; and 2) train EDA personnel to be local agents of change.

The data system should be made available to local planning bodies in a form which will lead them to raise new questions and provoke new responses. Reforms in the substance and forms of data and new types of information should be provided by EDA to the local planners. Reforms in the level of detail include an array of projections, disaggregation of migration data, and economic base information. The disaggregated picture answers questions most local agencies ask, it also forces important development questions. New kinds of information should be added to that supplied the district by EDA. Suggested are: 1) A "cross walk" through the file of important industrial location firms; 2) Analyses of the share of state monies going to the development district; 3) Industry reports -- industries that are important to the local economy.

Someone has to "go with" the information and help the local agency do something with it. The creation of a corps of specially trained EDA development agents is proposed. The agent should be a generalist, someone who sees the whole of the planning process. He should be able to put staff time "freed-up" by the data system to productive use. He should have the responsibility of being a technical advisor for all the local development agency's problems, solving those he can, helping to locate specialized assistance for those he can't. Also he should act

as a liaison between the local agency and EDA, improving the speed and efficiency of communication so that much less time and energy is spent waiting and second guessing. A functional decentralization can be achieved through a corps of local development agents who report directly back to Washington and who can provide on the spot service in the field.

Status: Completed August 1970.

ROLE OF COMMERCIAL BANKS IN REGIONAL ECONOMIC DEVELOPMENT

Performing Organization:	Federal Reserve Board	Monitoring Agency:	EDA - Office of Economic Research
Principal Investigator:	Paul Schweitzer	Project No.	99-7-13149.1

Objectives and Procedures: The overall focus of the study is on banking performance as it is affected by: 1) developmental characteristics of regions; 2) type of banking organization (unit, branch, or holding company); and 3) degree of competition in banking markets. Statistical analysis of banking and area socioeconomic data will be supplemented by field surveys.

Current Developments: Statistical work is still in process. One of the recent tasks initiated is a comparison of banking performance in EDA designated and nondesignated areas. The comparisons will be made within economically homogenous regions.

Status: The project is behind schedule. This is due to its being an in-house effort subject to higher priority delays, and to certain problems of interpretation that have arisen in the statistical work. It is expected that survey work will be completed in the summer of 1971.

THE INDUSTRIAL PLANT LOCATION DECISION PROCESS

Performing Organization:	Center for Urban Regionalism, Kent State University	Monitoring Agency:	EDA - Office of Economic Research
Principal Investigator:	Robert D. Dean	Project No.	99-7-13145

Objectives and Procedures: The purpose of this study is to identify the decision-making process in connection with new plant location. The major investigative device used consists of interviews with key decision-makers of 10 firms involved in new plant locations. The information as gathered on new plant location by the contractor could be of value to EDA in several important ways. First, this information may be used to identify locational characteristics and to evaluate the relative importance of these characteristics for particular industries at the four-digit-SIC (Standard Industrial Classification) level. Second, this type of information may be useful when it comes to determining the types of public investment programs needed to induce industry to locate in redevelopment areas. Third, the results of the study may also be of practical benefit to those interested in predicting the spatial pattern of new plant locations for certain industries and firms. Fourth, the investigations will provide insights concerning situations leading firms to search for new locations and the way they evaluate different sites. Finally, the findings may be of use to small communities in appraising the adequacy of their resources relative to the needs of specific industries.

Current Developments: In addition to the individual reports on results of extensive interrogations of officials in 10 dissimilar industrial firms, the chief investigator has provided a draft final report on the general findings that emerge from these and more than a hundred other interrogations of corporation officials.

The bulk of the report is devoted to a description, with schematic diagrams, of the steps followed by senior management in reaching a commitment on when and where to invest corporate resources in additional productive capacity. The schematic diagram indicates clearly that the process is commonly a long-range one, involving all major elements of corporate management, with recycling through the system as new or modified variables are introduced. It concludes that although return on investment is a central issue throughout the decision-making process, profit maximization is not invariably the ultimately critical factor in deciding where a plant should be constructed.

In contrast to the intricate decision-making mechanism used totally or in part by major corporations, the practices adopted by a small firm or individual seeking to become a goods producer are generally quite unsophisticated. The product line and market area are normally well-known at the outset so that the chief concerns are those of labor supply, raw materials, financial backing, and finally the selection of the site itself. The report outlines the steps characteristically followed by the small firm in resolving each of these considerations.

The report concludes with observations on how a computerized approach to selected community characteristics could substantially assist both the firms that wish to expand production and the communities that want more sources of employment. Another project is currently in progress, aimed at matching individual community resources with locational requirements of specific industries - See Industrial Location Determinants Study by Boise Cascade, Bureau of The Census , and CACI, Project No. 99-7-13170.

Status: The report is now undergoing final revision. Expected date of completion, Spring 1971.

RESEARCH ON REGIONAL ECONOMIC AND SOCIAL ANALYSIS OF FEDERAL EXPENDITURES

Performing Organization:	Curtis Harris Associates	Monitoring Agency:	EDA - Office of Economic Research
Principal Investigator:	Curtis Harris	Project No.	99-7-13193

Objectives and Procedures: This research represents a continuation of an earlier project to compile data on Federal expenditures by functional categories and to relate them on a regional basis to selected economic, social, environmental, and demographic variables (EDA Project Number 99-7-13163).

Specifically this project updated 1968 Federal expenditure data with 1969 data and expanded upon the economic data collected under the first project by adding new data in the fields of health, crime, and pollution. Many, but not all, of the data items are available by county.

Data files covering a wide range of social, economic, and demographic variables were secured from Federal, State, and private sources. These data were processed and coded to provide an extensive county-based data file. Summaries yield regional distributions (combinations of counties) of functional Federal outlays on a per capita basis. For comparisons of the relationships between these Federal outlays and area characteristics, counties were grouped by some 36 categories including (1) geographic (SMSA, central city, suburban, urban, rural, etc.); (2) demographic (percentage white and non white, highest and lowest average age, etc.); (3) economic (fastest and slowest growth, highest and lowest income, etc.); (4) social (highest and lowest crime rates, highest and lowest sound housing units, highest and lowest infant mortality rate, etc.); (5) environmental (highest and lowest auto density, highest and lowest pollution, etc.).

Findings: A tape file of the data records has been reproduced and is available for analytical purposes. In addition, several copies of summary tabulations showing distributions of expenditures have been prepared together with a report describing the sources of the data and the processing and estimating techniques used to make the various data series compatible.

Status: Completed. Final report and tabulations were received in December 1970.

RESEARCH AND TRAINING IN REGIONAL ECONOMIC DECISIONS MODEL

Performing Organization:	University of Maryland	Performing Organization:	EDA - Office of Economic Research
Project Director:	John Dorsey	Project No.	99-7-13108

Objectives and Procedures: The research aspect of this project was designed primarily to develop a regional forecasting model for use in decision-making by EDA. An additional purpose was to support research in public expenditure theory, and decision criteria for public program expenditures.

The training part of the grant provided support for development of an expanded curriculum in regional and urban economics, and for graduate assistantships and fellowships in this field.

Results: A large-scale regional forecasting model has been developed by Professor Curtis C. Harris, Jr., incorporating data through 1966. Papers describing the components of the model and its use include the following:

"A Multi-Regional, Multi-Industry Forecasting Model," by Curtis C. Harris, Jr., in Papers of the Regional Science Association Meetings, Santa Monica, California, November 1969.

"State and County Projections - A Progress Report of the Regional Forecasting Project," by Curtis C. Harris, Jr., Occasional Paper Series, University of Maryland, Bureau of Business and Economic Research, College Park, Maryland.

"Forecasting the Location of Industries," by Curtis C. Harris, Jr. Presented to the Southeastern Regional Science Association Meetings, University of North Carolina, Chapel Hill, April 18, 1969.

"Procedures for Estimating County Investment Expenditures by Input-Output Sector," by Curtis C. Harris, Jr., and Frank E. Hopkins.

"Procedures for Estimating County (Employment, Unemployment, Payrolls, Output) by Input-Output Industry Sector," by Curtis C. Harris, Jr.

"Procedures for Estimating County Consumer Expenditures by Input-Output Sector," by Curtis C. Harris, Jr., and Frank E. Hopkins.

Professor Martin C. McGuire has completed research for a book on public expenditure theory. A paper by Professor McGuire, "Grants-In-Aid Economic Incentives Among Governments," has been received.

The training part of this grant included the addition of two courses to the University curriculum: Introduction to Regional and Urban Economics and Advanced Regional and Urban Economics. In addition, a special seminar on current problems and developments in the regional field has been established. Visiting lecturers have included Federal Government experts, distinguished visiting scholars, regular University faculty, and outstanding regional development practitioners. The seminar has been open to Federal, State, and county officials, faculty members, and graduate students. Twenty-one graduate assistantships and five doctoral dissertation fellowships have been supported by this grant.

Status: Grant was funded through September 1970.

PUBLIC INVESTMENT PROGRAMS AND REGIONAL DEVELOPMENT

Performing Organization:	Washington University, St. Louis	Performing Organization:	EDA - Office of Economic Research
Principal Investigator:	Charles Leven	Project No.	99-7-13021

Objectives and Procedures: This grant supported research towards 1) developing a theory of public investment, concentrating on the relationship between public investment programs and regional development, and 2) developing analytical techniques for evaluating and selecting among alternative public investment grants.

Training for graduate students under the grant was provided through participation in the Workshop on Public Investment, which included presentations by visiting faculty from other institutions.

Results: Among the products of research under this grant is a paper by Professor Murray Weidenbaum, "Innovations in State and Local Government Finance." It covers 1) alternative methods of reallocating public resources from national to state and local levels, 2) new techniques of program budgeting, and 3) historical trends in local government revenues and expenditures. Another paper by Professor Weidenbaum, "A Government-Wide Program Budget," 1) provides an improved framework for allocating public investment resources, and 2) permits comparison of alternative programs for fulfilling broad national goals.

Other research products include the following:

- "Some Problems in Establishing a National Water Policy," by Charles Leven.
- "Migration: Chicken or Egg?" by Richard Muth.

Three papers by David Barkin:

- "Measuring the Regional Impact of Government Spending."
- "The Equalizing Impact of State Aid to Education."
- "Poverty and Federal Aid to Education."

Status: Grant was funded through September 1970.

REGIONAL FORECASTING MODELS

Performing Organization:	University of Washington, Seattle	Monitoring Agency:	EDA - Office of Economic Research
Principal Investigator:	Philip J. Bourque	Project No.	99-7-13024

Objectives and Procedures: The major research objectives under this grant were the design and application of techniques for using input-output tables in forecasting long term regional growth. The extensive development of regional input-output tables for many areas of the United States is documented in "An Inventory of Regional Input-Output Studies in the United States," by Philip J. Bourque and Gerald Hansen, 1967, and in an updated version by Philip J. Bourque and Millicent Cox, 1970. These studies provide evidence of the expanding use of input-output in regional analysis.

The forecasting model for Washington embodies a number of innovations in both the theoretical and applied level of regional forecasting. For one thing the model achieves a consistent relationship between industrial change in the nation and the region. In the consumption sector of the regional model, the distinction between marginal and average disaggregated consumption functions provides a vehicle for distinguishing between the induced consumption effects associated with population growth and the market expansion associated with increased per capita income. In this connection a distinction is made in the income projections between personal income increases derived from productivity change (intensive value added) and personal income growth matched by population increases (extensive growth).

Another portion of the research effort is the development of a regional econometric model for short term forecasts (1,2,3 years) of economic activity using estimates of regional income, consumption, investment, exports, and related variables.

Current Developments. Much of the effort of the past two years has been devoted to developing a set of regional and expenditure accounts, for use in the input-output model. That model has been used to generate projections. These projections have been compared with actual developments for 1967-1970 and the results appear satisfactory.

The input-output model of Washington State for 1967 is now complete and is available in the publication, Input-Output Tables for the Washington Economy, 1967.

In the light of the economic difficulties in the Seattle area, many inquiries concerning research findings and applications to the current economic decline have been received. These inquiries have come from the Department of Defense, news media, the Seattle Area Industrial Council, and the State of Washington Department of Revenue.

Professor Haney Scott presented a paper at the April 1970 Regional Economic Conference in Seattle entitled, "Contra-cyclical Monetary and Fiscal Policy in Regions: Can It Be Done?"

Uses: The following are a list of applications of the Washington Study which have been reported, but for which no paper or formal report is available:

1. Washington State Department of Commerce and Economic Development:

    a. Output, Income, and Revenue Forecasting, 1969-1972, a forecast prepared for state budgetary and revenue purposes.

    b. Economic Impact of Tourism in the State of Washington.

    c. Impact of Foreign Trade in the State of Washington.

    d. Impact of Water-Borne Commerce on the State of Washington.

    e. Impact of Boeing Expansion Upon the State of Washington.

    f. Ranking of Industries According to Exports.

    g. Forecast of Imports by Washington Industries.

    h. Testimony Before State Legislature on Impact of Taxes on Aluminum Ore.

    i. Testimony Before Maritime Commission on Impact of Transportation Rate Changes.

2. Western Management Consultants, Inc. - Stadium Site Selection, King County, Washington, Income Multipliers Derived From the Washington Interindustry Study Used to Estimate Income Impact of the Stadium.

3. Battelle Memorial Institute - An Evaluation of the Impact of Oceanographic Development on Washington Industries.

4. CONSAD Corporation - An Evaluation of Mechanical Techniques of Regional Input-Output Table Construction Evaluated in Terms of Results for the State of Washington.

5. Consulting Services Corporation--An Appraisal of the Economic Value of Public Land in Washington With A Forecast to 1980, prepared for the Public Land Law Review Commission.

6. Washington State University:

   a. Examine Levels of Expenditure and Effort in Relation to the Research and Extension Programs of the University.

   b. County Agents--Speeches About Value of Agriculture in State of Washington Economy.

Status: Currently funded through June 15, 1971.

TRAINING

STUDENT INTERNSHIP PROGRAMS

Performing Organizations and Principal Investigators	Monitoring Agency: EDA - Office of Economic Research
Southern Regional Education Board (SREB) William R. Ramsey	Project No. 99-7-13109.5
Western Interstate Commission for Higher Education (WICHE) Robert S. Hullinghorst	Project No. 99-7-13155.3
Midwestern Advisory Committee on Higher Education (MACHE) Donald H. Clark	Project No. 99-7-13204
New England Board of Higher Education (NEBHE) Norman Stein	Project No. 99-7-13210

Support is continuing for the student intern training projects that have been operated by the Southern Regional Education Board (SREB) and Western Interstate Commission for Higher Education (WICHE) since 1969. It is expected that SREB and WICHE grants of $100,000 each will support an estimated 120 and 40 interns respectively in the Summer of 1971.

In addition, the Midwestern Advisory Committee on Higher Education (MACHE) of the Council of State Governments has agreed to establish and operate an intern training in the 12 midwestern states: North and South Dakota, Nebraska, Kansas, Missouri, Iowa, Minnesota, Wisconsin, Michigan, Ohio, Indiana, and Illinois.

In late 1970, the New England Regional Commission contracted with the New England Board of Higher Education (NEBHE), at Wellesley, Massachusetts, to initiate an intern training program for the six New England states patterned after the SREB model. EDA has granted NEBHE additional funds, which will enable it to extend the project into New York State in 1971. Pending availability of funds, the intent is to expand the project to cover other mid Atlantic states as well, giving the internship program nationwide coverage. Both MACHE and NEBHE will stress assignment of interns to problems identified by Economic Development District staffs as well as other state and local development groups.

Since 1970 EDA has urged the project managers to increase their efforts to obtain a greater share of financial project support for the interns from state and local governmental and educational agencies that are both the short and long term beneficiaries of cooperative efforts

to resolve local economic problems. The disparity in projected 1971 costs per intern between the SREB and WICHE grants reflects the fact that several southeastern states have increased their participation in the program and have agreed to allocate resources for state-wide intern projects. North Carolina funded about 100 interns in 1970, and four other neighboring states initiated state-managed programs, which only need nominal funds from EDA. The objective now is to have all of the programs in southern states on a self-sustaining, autonomous base in about three years. Project managers in the other regions are similarly instructed to seek other sources of support so that EDA's "seed money" can be withdrawn, or redirected to other avenues for meeting the technical manpower needs of economic development organizations.

The following student papers have been received recently:

Southern Regional Education Board

"Child Care Ministry - Dorchester County, S.C.," by Verrell D. Thomas.

"Community Development on Rural Sea Island," by S. Diane Brannon.

"Land Use and Property Ownership - Gulf County," by Peter MePhee.

"Headstart - Case Study of a Project Family," by Linda Dingle and Phyllis L. Cummings.

"Intestacy and Real Property," by John H. Bennett, Jr.

"Business License Comparative Study - City of Cordele, Georgia," by John Gary Hawthorne.

"Inventory of Existing Land Use in the Middle Georgia Area," by Michael J. Hall.

"Trends in Management and Technical Assistance in South Carolina," by Charles E. Bevis.

"A Reference Guide for a Poison Control Center," by David M. Arrington and Stonewall C. King, Jr.

"Interns for Community Development," by Edward R. Cole and Richard K. Smurthwaite.

"Role of The Coastal Plains, Regional Commission in the Southeast," by Kirk V. Wiles, Jr.

"An Evaluation of Housing Development Corporations," by Randy H. Schwartz.

"Comprehensive Catfish Survey for North Delta Area," by Daniel W. Stroud, Jr.

"CO-OPs and Buying Clubs for Improving Local Economics," by Douglas W. Jaenicke.

"Water Quality Survey - Grainger County, Tennessee," by E. Steve Roach.

"Analysis of Consumer Demand Determination in the Furniture Industry in the Fort Smith Area," by Murphy Bird

"Student Manpower" - A Report of the Atlanta Student Manpower Project for the U.S. Department of Labor

"Housing Study - Arkhoma Regional Planning Commission," by Kenneth Pate

"Public Improvements Program," by James L. Roberson

"Health Needs and Health Agencies in Anderson, Morgan, and Scott Counties," by Alan H. Danziger

"Crime in the Streets - a study of law enforcement agencies in the Coastal Region," by Franklin C. Odom

"Comprehensive Health Planning - A Survey of Bryan, Camden, Glynn, Liberty, Long, and McIntosh Counties," by Robert Smith and King Rhodes

"Alma-Bacon County, Georgia - Model Cities Program," by Raymond S. Cannon

"An Industrial Survey of the Barren River Area Development District," by William E. Bennett

"Police Department Cost Analysis-Columbus, Georgia," by Lewis L. Leonard

"A New Planning District's Look at Zoning," by Angela N. Harper

"Environmental Plus or Minus?? - A Preliminary Study of Environmental Problems in the Smith Montain & Leesville Lake Region," by John D. Healey, Jr. and Herbert N. Hamric, III

"Records Study for Virginia Division," by Blake L. Weston.

Western Interstate Commission for Higher Education

"Tourism Development for Bisbee, Arizona," by Robert Behrendt

"Industrial Park Feasibility Study - Livingston, Montana," by Joe Furshong

"Employment Situation on Rocky Boy's and Fort Belknop Mountain," by Larry Brubaker

"Designing Parks for Indian Reservations," by Sheryl Hood Leffel

"Unemployment in Deer Lodge and Silver Bow Counties," by Sharon Bailey

"The Industrial Development Division In Washington," by David Kaun.

"Businesses and Manufacturers in Shasta County, California," by Richard Hendrix.

"The Economic Feasibility of Confinement in Cow-Calf Operations," by Gordon Pracko.

"A Jitney Transportation System for Denver Ghettos," by Leonard D. Lowe.

"An Evaluation of Economic and Business Statistics in Nevada," by Roger Allen Bergmann.

"Trico Labor Force Study," by Raymond Bartlett.

"Arizona's South Central Indian Communities," by Ardell A. Ruiz.

"A Research and Development Center for Utah Valley," by R. LaVar Huntzinger.

"Air Transportation Demand Model," by David Weitzel.

"A Feasibility Study for a 'small business investment company'," by William Derrickson.

"An Economic Base Study of Columbia County," by Warren L. Blakslee.

"Resource, Markets, and Transportation in the Lower Columbia River Region," by Richard Arend.

"An Administrative Analysis of the Economic Research Function in State Government," by Gail L. Achterman.

"A Regional Recreation and Tourism Study - Valley County, Montana," by Brooke Y. Thompson.

"Industrial Potential of Elko County, Nevada," by Eric Lai.

"The Travel Industry - Its Role in the Economy of Coos County, Oregon," by James R. Hawley.

"Senior Citizen Housing in Platte County, Wyoming," by Jeffrey White.

"Humboldt County's Transportation System," by Daniel C. O'Connell.

"Tourism: Its Role in the Economy of Cascade Locks, Oregon," by Scott Hannigan.

"Data Processing Feasibility," by Douglas Ward Mardfin.

"Large Land Subdivision in North Central New Mexico," by Hilaria Rubio, Jr.

"Research and Development in Hawaii County," by Wayne Miyaji.

"A Survey of Industrial Land Use in Thurston County, Washington and A Proposal for a Washington State Industrial Land Bank Corporation," by Nigel Rees.

EDA RESEARCH REPORTS

EDA research studies prepared under contract to the Economic Development Administration are now available from the Commerce Department's National Technical Information Service. These reports are available at the following prices:

Any report published prior to January 1, 1969	$6.00 per copy
300 pages or less	3.00 "
301-600 pages	6.00 "
over 600 pages	9.00 "
Microfiche (a unitized form of photography)	.95 "

All orders should be sent to: National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22151.

I. Area Problems and Potentials — Order No.

Alaska-Japan Economic Relations
by: University of Alaska, January 1968
(available only in microfiche) — PB 179 467

Alaska-Northwest Canada Economic Activities
Part I. A Summary Comparison of Mining Laws and Oil and Gas Laws and Practices with Recommendations for Policy
by: University of Alaska - 1968
168 pages — PB 179 470

Communication and Mountain Development - A Summary Report to Two East Kentucky Studies
by: Mary Jean Bowman and Dudley Plunkett
University of Chicago - December 1968
172 pages — PB 183 155

The Impact of State and Local Fiscal Policies on Redevelopment Areas in the Northwest
by: The New England Economic Research Foundation
April 1967 - 391 pages — PB 178 969

The Industrialization of Southern Rural Areas
by: Abt Associates - December 1969
144 pages — PB 185 877

Mining and Public Policy in Alaska (Title V)
by: University of Alaska, Institute of Social, Economic, and Government Research
June 1969 - 125 pages — PB 185 230

II. Economic Development Operations and Processes

Area Employment Prediction to Determine Public Facilities Requirements
by: Charles River Associates - November 1967
374 pages PB 178 652

Area-Welfare--Eligibility for Development Assistance
by: Regional & Urban Planning Implementation, Inc. - May 1965
Volume I - 253 pages PB 179 265
Volume II - 234 pages plus appendix PB 179 266

Capital Markets and Regional Economic Development - Financial and Technical Assistance to Small Enterprises in Developing Areas of the Ozarks, and Upper Great Lakes Region
by: Surveys & Research Corporation - March 1968
184 pages PB 178 321

The Changing Structure of Employment and Income in the Coastal Plains Development Region (Report #1) - March 1969
by: Charles Floyd - University of Georgia
198 pages PB 183 412

The Changing Structure of Employment & Income in the Four Corners Region (Report #3) - August 1970
by: Charles Floyd - University of Georgia
80 pages w/statistical tables PB 195 183

The Changing Structure of Employment and Income in the Upper Great Lakes Region 1950-67 (Report #2) - April 1970
by: Charles Floyd - Univ. of Georgia
72 pages w/statistical tables PB 195 184

Coastal Plains Economic Development Region, Socio-Economic Profile
by: Joel Frisch - ORDP - November 1967
90 pages PB 177 778

Coordination of Federal Programs in Regional Planning
by: Midwest Research Institute - Sept 1966
159 pages PB 177 498

Criteria for the Location of Federal Regional Facilities
by: Rand Corporation - April 1966
76 pages PB 178 885

Employment Adjustment in Two Growing Labor Markets
(OER Title - Employment Adjustment of Migrations to the Growth Centers of Winston-Salem, Greensboro, and High Point, N.C.)

Volume I - Returns to Investment in Human Migration - April 1967
95 pages PB 178 875

Volume II - Employment Adjustment in Two Growing Labor Markets - April 1967
185 pages PB 178 876

An Examination of the Applicability of EDA Tools to the Problems of Urban Slums
by: Regional Economic Development Institute, Inc.
May 1967 - 43 pages PB 178 880

Feasibility Analysis of a Public Investment Data System
by: Operations Research, Inc. - August 1967
Volume I - 67 pages PB 177 500
Volume II - 266 pages PB 177 501

Forest Production and Industry under the Area Redevelopment Act
by: Department of Interior - March 1962
11 pages PB 170 140

A Framework for Federal Policies and Programs Concerning Urban Programs
by: Systemetrics, Inc. - January 1969
256 pages PB 182 455

Guide to Economic Projections and Forecasts
by: Anthony Radspieler, EDA - February 1967
110 pages PB 185 941

Input-Output Models and Local Development Planning
by: CEIR, Inc. - September 1962
72 pages PB 179 285

Local Development and Redevelopment Cycles in the United States
by: University of Maryland - October 1968
49 pages PB 177 032

The Measurement of Industrial Capacity
by: Economic Associates, Inc. - October 1968
49 pages PB 176 456

Project Benefits-Project Scoring for the Economic Development Administration
by: Planning Research Corporation - February 1967
52 pages PB 179 045

Regional Labor and Capital Migration (Research Report)
by: Michael Brennan, Brown University - May 1967
76 pages w/appendix PB 178 323

The Regional Planning of Selected Public Facilities Systems
by: Management and Economics Research, Inc. - June 1968

Volume I - Planning for Action
63 pages PB 180 590

Volume II - Economic Guidelines for Planning
215 pages PB 180 591

Retraining and Migration as Factors in Regional Economic Development
by: Industrial Relations Research Institute, University of Washington - September 1966 PB 177 499

A Review of Economic Research and Planning for the Coastal Plains Region
by: Gene A. Bramlett, SREB - October 1967
500 pages PB 178 128

The Role of Growth Centers in Regional Economic Development
by: Iowa State University - September 1966
83 pages PB 177 542

Supplements A and B to: The Role of Growth Centers in Regional Economic Development
82 pages PB 177 543

Supplements C and D to: The Role of Growth Centers in Regional Development
133 pages PB 177 572

Supplements E and F to: The Role of Growth Centers in Regional Economic Development
123 pages PB 177 573

The Role of Transportation in Regional Economic Development
by: Charles River Associates - September 1966
200 pages PB 177 497

The State of the Art in Regional Economic Development: Summer Institute on Regional Economic Development
by: Regional Economic Development Institute - 1966

Sections		
1	115 pages	PB 175 695
2	199 "	PB 175 696
3	200 "	PB 175 697
4	63 "	PB 175 698
5	209 "	PB 175 699
6	99 "	PB 175 700

Study of the Determinants of Consumption Expenditures on Tourist and Recreation Services
by: M. O. Clement, Dartmouth College - June 1967
169 pages PB 178 881

A Study of the Effects of Public Investment
by: CONSAD Research Corporation - May 1969
363 pages PB 184 084

A Study of Local Leadership in Community Economic Planning
by: Human Sciences Research, Inc. - April 1966
216 pages PB 178 932

A Study of Technologies for Reducing Winter Weather Costs (Title V)
by: Arctic Institute of North America - June 1969
98 pages w/appendices PB 185 658

Supplement to Upper Great Lakes Region Survey on Existing Research
by: Upper Great Lakes Research & Development Council
December 1968
90 pages PB 183 154

Technique for Area Planning (Report) - December 1968
by: Regional Economic Development Institute
77 pages PB 178 057

Technique for Area Planning - a Manual for the Construction and Application of a Simplified Input-Output Table
127 pages PB 178 058

A Technique for Selecting Candidate Industries for Surplus Labor Areas
by: CEIR, Inc. - May 1962
84 pages PB 170 145

Upper Great Lakes Region Survey of Existing Research
by: Upper Great Lakes Research & Development Council
October 1966
156 pages w/appendix PB 183 154

Water, Mineral, and Forest Resources in Regional Economic Development
by: Stanford Research Institute - September 1966
230 pages PB 177 544

III. Program Evaluation

Evaluation of Alternatives to the Business Loan Program (Title V)
by: Planning Research Corporation - June 1968
68 pages PB 182 532

Evaluation of Boundary Alternatives for a Proposed Upper Great Plains Economic Development Region
by: Upper Midwest Research Development Council
December 1966
41 pages PB 176 883

Evaluation of Economic Development District and Area Planning Program
by: Robert R. Nathan Associates - December 1969
Volume I - 104 pages PB 189 761
Volume II - 336 pages PB 189 672

An Evaluation Methodology for Technical Assistance Programs
by: Booz-Allen & Hamilton - December 1969
41 pages w/appendices PB 189 705

Improving Business Loan Effectiveness
by: EBS Management Consultants, Inc. - November 1966
61 pages PB 178 969

A Methodology for Evaluation of the Economic Development Administration's Public Works Programs
by: EBS Management Consultants, Inc. - May 1969
86 pages w/appendices PB 189 676

A Pilot Evaluation of Twenty-Four EDA Public Works Projects
by: EBS Management Consultants, Inc. - November 1969
146 pages PB 189 675

Project Evaluation for EDA
by: Rand Corporation - April 1966
21 pages PB 178 884

Project Evaluation - Project Scoring for the Economic Development Administration
by: Planning Research Corporation - November 1966
42 pages PB 179 046

IV. Subnational Impact of National Economic Activity

Effects of Mass Layoffs on Local Unemployment Rates
by: Kirschner Associates - December 1967
43 pages PB 835 541

Federal Programs for Regional Development
by: Office of Regional Economic Development
July 1966
144 pages w/indices PB 176 887

The Impact of Science and Technology on Regional Economic Development
by: National Academy of Sciences - July 1969
170 pages PB 184 464

A Preliminary Analysis of the Economic Effects of the Urban Employment Opportunities Development Act
by: Jack Faucett Associates, Inc. - August 1967
54 pages w/appendex PB 185 725

Regional Economic Development in the United States

Part I	134 pages	PB 178 169
Part II	157 pages	PB 178 170
Appendices	100 pages	PB 178 171

Regional Federal Procurement Study (Final Report)
145 pages October 1967 PB 177 679

Appendices to Regional Federal Procurement Study
(Vol I, A-G) - 484 pages PB 177 680

Regional Federal Procurement Study
(Vol II, H-I) PB 177 681

RECEIVED
JUN 1 5 2011
CENTER FOR RESEARCH

U.S. DEPARTMENT OF COMMERCE
Economic Development Administration
Room 415, Page Building II
Washington, D.C. 20007

OFFICIAL BUSINESS

PENN STATE UNIVERSITY LIBRARIES
A0000719992B9

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE